

**IDAHO STATE**

**PESTICIDE MANAGEMENT PLAN (PMP)**  
**FOR GROUND WATER PROTECTION**

**Prepared by**  
**Idaho State Department of Agriculture**

**In cooperation with:**

**Idaho Department of Environmental Quality**  
**Idaho Department of Water Resources**  
**Idaho Soil Conservation Commission**  
**University of Idaho, Cooperative Extension Service**  
**USDA Natural Resources Conservation Service**

**Reviewed by:**

**Agricultural Ground Water Coordination Committee**

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Idaho Canola & Rapeseed Commission  
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Idaho Dairy Products Commission  
Idaho Grape Growers and Wine Producers Commission  
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Idaho Mint Commission  
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## EXECUTIVE SUMMARY

The Environmental Protection Agency's (EPA's) *Pesticides and Ground-Water Strategy (1991)* was developed to describe the policy framework in which the Agency intends to address risks of ground water contamination by pesticides. The need for such a policy initiative emanated from evidence that pesticide use can lead to contamination of ground water. Pesticides have been found in ground water in many states, including Idaho. The general goal of the *Strategy* is to manage the use of pesticides in order to protect human health and prevent degradation of the ground water resources of the nation.

The *Strategy* emphasizes prevention of ground water risks by managing pesticide use in a way that reduces or eliminates the leaching of pesticides to ground water, particularly in vulnerable areas. The focus of the *Strategy* is on normal legal use of pesticides. Under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), EPA encourages states to develop and implement State Pesticide Management Plans (PMPs). Idaho's PMP sets forth a process for preventing and responding to pesticide detections to ground water. In the event that chemical specific PMPs are needed, Idaho will have a framework in place for preventing and responding to contamination related to individual pesticides.

### Background

Within a few years after EPA proposed its initial *Agricultural Chemicals in Ground-Water Strategy* in 1987, the EPA began to provide seed money for state FIFRA lead agencies to begin ground water protection programs related to pesticides. About this time the Idaho State Legislature passed the Idaho Ground Water Quality Rule in 1989. The Ground Water Council was formed and an Agchemical Subcommittee was created to develop the *Agricultural Ground Water Quality Protection Program for Idaho (1995)*. This agency/private sector planning processes developed a state strategy to address point and nonpoint source pollution associated with potential sources of agricultural pollution. Through this plan, the Agricultural Ground Water Coordination Committee was formed to facilitate coordination of resources and projects.

### Idaho's PMP

The Idaho State Department of Agriculture (ISDA) has been the lead agency in developing the PMP. The first official draft of the plan was circulated to Idaho state agencies and the EPA Region X in 1994. The current and final draft has been developing since that time period, along with the writing and implementation of the *Agricultural Ground Water Quality Protection Program for Idaho (1995)*. The EPA has been working since 1987 in developing a Pesticides and Ground Water Rule requiring PMPs to be written on specific pesticides. On June 26, 1996 the EPA Office of Pesticide Programs (OPP) submitted their *Pesticides and Ground Water State Management Plan Regulation; Proposed Rule*. The draft rule would require chemical specific plans to be written for Atrazine, Cyanazine, Simazine, Alachlor, and Metolachlor.

With this Draft Rule published in the federal register, the comment period provided an opportunity for comment back to EPA. ISDA staff, and nine other states assisted OPP in 1997 through 1999 with review of public comments. The committee was named the National PMP Review Team. The six month review processes resulted in specific recommendations to OPP on Draft Rule language change. As this national process progressed, ISDA began completing the final PMP draft and planning for chemical specific plans.

### **Plan In Brief**

The *Idaho State Pesticide Management Plan for Ground Water Protection (PMP)* outlines the government agencies involved with protecting ground water from pesticides. The document describes the roles of each agency, and how these authorities and programs will be coordinated. The involvement of pesticide applicators, dealers, and registrants is described also. The document is viewed as a *Generic PMP* and will be utilized by the ISDA to prevent and respond to any potential or actual pesticide threats to ground water. Ground water and human health protection are the primary goals of the document and program.

The core aspects of the PMP are: ground water assessment and planning, ground water monitoring, prevention actions, and response to ground water contamination. Other important components include enforcement mechanisms, public awareness and participation, information dissemination, and records and reporting progress. An emphasis will be placed on information and education, Best Management Practices (BMPs), monitoring, and pesticide probability mapping. A four-tiered monitoring plan will consist of statewide, regional, local, and enforcement monitoring. If the concentration of a pesticide in ground water, resulting from current legal use, is equal to or greater than an established reference point (i.e., MCL, HAL, or RfD) then more serious measures such as use prohibition will be taken to protect the resource. The response and regulatory framework outlines the processes ISDA will utilize to define and respond to contamination situations.

### **Recommendations**

To implement the Generic PMP, and subsequent Chemical Specific PMPs various programs and actions will need to be implemented. As the FIFRA lead agency, ISDA will be the lead in implementing the PMP. ISDA will be responsible for monitoring pesticides in ground water, determining impacts, conducting prevention and response actions, and taking regulatory actions under FIFRA and the Idaho State Pesticide Law and Rules. ISDA will continue to chair the Agricultural Ground Water Coordination Committee. This committee will be utilized to coordinate PMP activities including prevention and response actions. Various agency roles are outlined in this Generic PMP and any following Chemical Specific PMP. Additional funds and commitments will be needed to implement various components of the PMP. These items will be phased in as the Generic and Chemical Specific PMPs are created and implemented.

## I. INTRODUCTION

As a national resource, ground water provides about one-fourth of all water used in the United States. Ground water is utilized by nearly one half of the nation's population. In rural areas the use of ground water is the dominant form of drinking water. Idahoans have for many years recognized the importance of ground water. In Idaho ground water has many important beneficial uses including use for drinking water, agriculture, aquaculture, and industry. Ground water is the principal source of water for domestic, agriculture, and industrial applications in Idaho.

Idaho ranks third nationally behind California and Texas for total water use. Nearly 6,500 million gallons of ground water are used in the state each day (Yee and Souza, 1984). Three percent or approximately 195 million gallons per day of this total supplies 90% of Idaho's drinking water. Agriculture and industrial application use the remaining 97% with irrigation accounting for the majority of this use.

Idaho agriculture is heavily dependent on agrichemicals for economical crop protection (Mahler, 1991). Agricultural pesticide use can occur on land surfaces that overly ground water systems that are susceptible or vulnerable to contamination. The fact that much of Idaho's agriculture is associated with irrigation can contribute to the vulnerability of ground water systems. For many years, it was believed that the soil and rock formations overlying ground water resources protected the ground water from contamination. Through biological and physical processes within the soil and rock formations, pesticides are often adsorbed and/or degraded. These processes can indeed prevent pesticides from leaching to and contaminating the ground water.

Unfortunately, research and monitoring has shown that pesticides can leach through soil and rock formations and cause ground water contamination even when the pesticides are applied at normal rates and by normal application methods. Contaminated ground water can adversely impact ground water uses and the quality of interconnected surface water. Pesticides can also directly impact surface water quality through direct runoff or erosion. In Idaho, many different pesticides have been detected within ground water and surface water.

Based on the importance of ground water in Idaho and the concern over pesticide contamination, there is a need for the development of a strategy to protect ground water from potential contaminants originating from agricultural pesticide applications. The Idaho State Management Plan (PMP) for Pesticides describes Idaho's strategy. Besides addressing agricultural pesticide applications, the PMP will also address other pesticide uses, which represent potential contamination sources. These other uses are related to forestry activities, nursery management, canal system maintenance, turf management, ornamental industries, general pest control, and any other activities which use pesticides in Idaho.

## **EPA's Pesticides and Ground Water Strategy**

The U.S. Environmental Protection Agency (EPA) published the Pesticides and Ground Water Strategy in 1991. The EPA's Pesticides and Ground Water Strategy is designed to manage the use of pesticides in order to prevent adverse effects on human health and the environment and to protect the environmental integrity of the nation's ground water resources. The EPA's strategy is a description of management philosophies, to be implemented by each state, related to the use of pesticides which pose a risk of contaminating the nation's ground water resources. The Pesticides and Ground Water Strategy is intended to complement the EPA's 1991 overall ground water strategy entitled Protecting the Nation's Ground Water: EPA's Strategy for the 1990's.

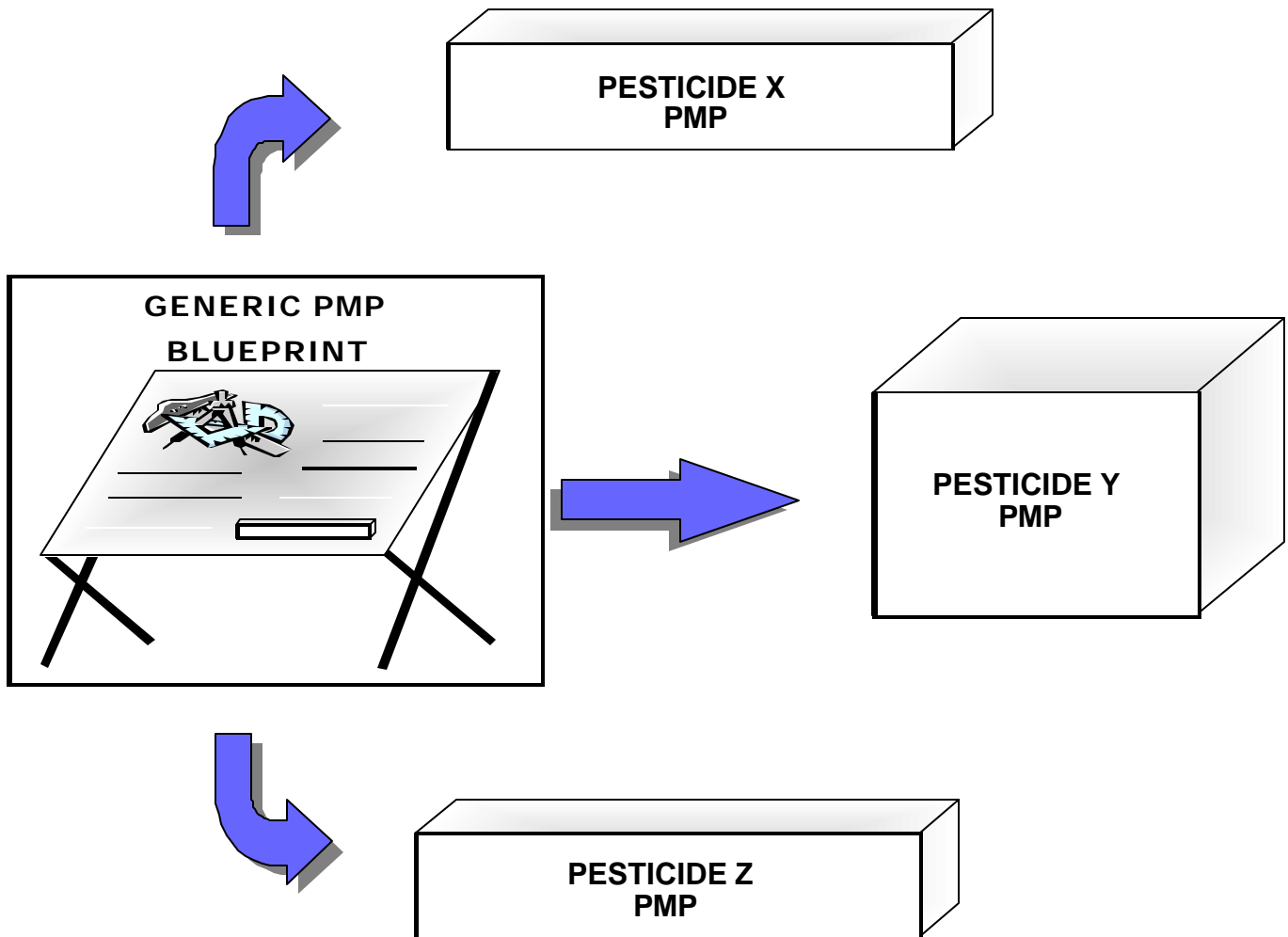
Prevention strategies are emphasized over remedial treatment as described within the EPA Strategy. Another focus of the EPA strategy document is the management and protection of current or reasonably expected sources of drinking water and ground water that is closely connected hydrologically to surface waters. A federal-state partnership approach is a primary component of the pesticides strategy document. According to the EPA's pesticides strategy document, when EPA determines that a pesticide presents a significant risk of leaching to ground water in a state, it may either cancel the registration of that compound or allow the state to prepare a "State Management Plan" (PMP) describing how the state will manage the pesticide to protect ground water. The EPA strategy also encourages states to prepare "generic" PMPs stating how they will generally manage all pesticide chemicals to assure ground water protection. Generic PMPs are not required of states but are encouraged by EPA so that a chemical specific PMP could be created with the generic plan as a framework (Figure 1). By designing a voluntary Generic PMP, the state can facilitate the timely and cost-effective development of Pesticide PMPs as the need arises.

## **Idaho State Pesticide Management Plan (PMP) For Ground Water Protection**

Recognizing the importance of protecting ground water, the potential ease of pesticide contamination, and the importance of agriculture to Idaho's economy, the State of Idaho will work to implement a national strategy for ground water protection from pesticides. This effort begins with the establishment of this Generic State Pesticide Management Plan (PMP) for the State of Idaho.

Idaho's PMP, which is related only to pesticides, is to be consistent with the goal of EPA's Pesticides and Ground Water Strategy and the ground water protection policies of the State of Idaho. As stated in Idaho's Ground Water Protection Act of 1989: "the goal .... shall be to maintain the existing high quality of the state's ground water and to satisfy existing and projected future beneficial uses including drinking water, agricultural, industrial and aquaculture water

supplies. All ground water shall be protected as a valuable public resource against unreasonable contamination or deterioration.” The Act



**Figure 1. By designing a voluntary Generic Pesticide Management Plan, the state can facilitate the timely and cost effective development of Chemical Specific PMPs.**

further states: “It is the policy of the state to prevent contamination of ground water from any source to the maximum extent practical. The discovery of any contamination that poses a threat to existing or projected future beneficial uses of ground water shall require appropriate actions to prevent further contamination.” The policies of the state of Idaho and EPA are consistent with each other and provide a framework for committing the resources in a coordinated and effective manner to protect human health and the resource.

The policy of the State of Idaho is that existing and projected future beneficial uses of ground water shall be maintained and protected, and degradation that would impair existing and projected future beneficial uses of ground water and interconnected surface water shall not be allowed. As stated in the Ground Water Quality Protection Act of 1989, it is the policy of the state to prevent contamination of ground water from any source to the maximum extent practical. Furthermore, the discovery of any contamination that poses a threat to existing or projected future beneficial uses of ground water shall require appropriate actions to prevent further contamination.



## II. STATEMENT OF PHILOSOPHY AND GOALS

Idaho's philosophy and goals are consistent with the EPA's *Pesticides and Ground Water Strategy* and the policies and programs outlined within the *Idaho Ground Water Protection Plan* (1992). The *Idaho Ground Water Protection Plan* was created by Idaho Ground Water Quality Council and was a mandate originating from the *Ground Water Quality Protection Act of 1989*.

It is the goal of the State of Idaho to prevent unreasonable adverse effects to human health and the environment through the protection ground water and interconnected surface water. Idaho's State Pesticide Management Plan (PMP) will, therefore, emphasize the protection of human health and the environment in addition to beneficial uses of all water. To help accomplish these goals, Idaho's PMP will address pesticide use and ground water protection in a way that will help maintain and protect the existing high quality of the state's ground water and all existing and projected future beneficial uses of ground water. The PMP focus will be on the prevention of ground water contamination from pesticides, since clean up of contaminated ground water may be impractical for both technical and financial reasons.

Reference levels will be used to help with the protection of ground water from pesticides. The reference levels will be, at a minimum, protective of drinking water use. These reference levels will, therefore, be based on Maximum Contaminant Levels (MCLs) under the Safe Drinking Water Act (SDWA), EPA Health Advisory (HA) numbers, or other approved health-based standards. Reaching the reference level for a pesticide would be considered a failure of this PMP. Where the above reference levels are not protective of existing or projected future beneficial uses of ground water or interconnected surface water, then a more stringent approach to preventing degradation to the reference level will be used in the area of concern.

The reference levels will be applicable to all ground water, with the only exceptions being those areas where variances have been permitted through existing state ground water regulations under conditions which are protective of human health and the environment and also allow for public comment. The variances may result in increased ground water protection through the use of a more stringent reference level and/or increased prevention measures, or result in decreased ground water protection through the use of a less stringent reference level and/or decreased prevention measures. These variances may be through a ground water categorization or recategorization processes as identified within the *Idaho Ground Water Quality Plan* and proposed within the draft *Ground Water Quality Rule*, or through other approaches recognized within state laws and rules.

Idaho's philosophy and goals are consistent with several key policies found within the *Idaho Ground Water Quality Plan*. These policies are presented in Table 1. As consistent with Policy I-A, Idaho will work to maintain and protect the existing high quality of the state's ground

water. Policies I-B and II-B support protection of existing and projected future beneficial uses by not allowing degradation or impairment of those uses. The protection of all ground water, to meet MCLs or other health levels, is consistent with Policies I-C and I-D. And finally, to focus on prevention is consistent with all of the policies, especially Policy II-A. These policies are derived from and are consistent with the policies and goals of the Idaho Ground Water Protection Act of 1989.

**Table 1. Policies from the Idaho Ground Water Quality Plan.**

<b>POLICIES FROM IDAHO'S GROUND WATER QUALITY PLAN</b>	
<i>I-A. Ground Water Quality Protection</i>	The policy of the state of Idaho is to maintain and protect the existing high quality of the state's ground water.
<i>I-B. Existing and Future Beneficial Uses</i>	The policy of the state of Idaho is that existing and projected future beneficial uses of ground water shall be maintained and protected, and degradation that would impair existing and projected future beneficial uses of ground water and interconnected surface water shall not be allowed.
<i>I-C. Categorization of Ground Water</i>	The policy of the state of Idaho is to provide differential protection for the state's ground water resources. A ground water categorization system should be established for aquifers or portions of aquifers. The categorization system should be based on vulnerability of the ground water, existing and projected future beneficial uses of the ground water, existing quality of the ground water, and social and economic considerations.
<i>I-D. Ground Water Quality Standards</i>	The policy of the state of Idaho is to establish ground water quality standards for biological, radiological and chemical constituents.
<i>II-A. Prevention of Ground Water Contamination</i>	The policy of the state of Idaho is to prevent contamination of ground water from all regulated and nonregulated sources of contamination to the maximum extent practical.
<i>II-B. Agricultural Chemical and Nutrient Management</i>	The policy of the state of Idaho is that agricultural activities utilizing agricultural chemicals or nutrients applied to the land for the purpose of agricultural crop production will be managed so that these potential contaminants will not impair existing or projected future beneficial uses of ground water below the crop root zone.
<i>III-A. Public Education on Ground Water Quality</i>	The policy of the state of Idaho is to provide educational programs on ground water protection, prevention of ground water contamination, and ground water restoration.
<i>III-B. Ground Water Quality Research</i>	The policy of the state of Idaho is that applied research and development programs be conducted to protect ground water quality.

### **III. ROLES AND RESPONSIBILITIES AND LEGAL AUTHORITY**

The State of Idaho has the central role in developing and implementing the state management plans. ISDA is the lead agency in this process. To successfully meet the challenges of the state management plan, ISDA will be coordinating with other state, and also federal agencies. Each agency will have unique roles in the implementation of the plans. Agency coordination and cooperation is essential for effective, efficient, and economical implementation.

The number of agencies involved with pesticide management, ground water protection, agricultural management, and the implementation of the PMP are numerous. ISDA legal authorities and mandates for this protection program come from the EPA and the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) which EPA administers. In Idaho, ISDA implements FIFRA, and the PMP process. Other state, federal, and local agencies have a role in the implementation of PMPs.

### **PROGRAM INTERACTIONS AND INTERRELATIONSHIPS**

Protection program interactions and interrelationships are necessary to understand for proper coordination and consistency. The following is a review of roles, responsibilities and the interactions of the agencies involved with agricultural ground water management.

#### **U.S. Federal Government**

##### **U.S. Environmental Protection Agency (EPA)**

The EPA has the legal authority and responsibility to regulate pesticide manufacture, registration, use, storage, disposal, and response to improper pesticide releases. The EPA has the legal authority and responsibility to ensure the protection of the nations ground and surface waters from any type of pesticide contamination. EPA utilized the legal authorities and mandates of several federal acts in creating 1991's "Pesticides and Ground-Water Strategy".

##### **A. Legal Authorities Necessary to Implement the State Pesticide Management Plan**

Five different statutes administered by the EPA include some provisions for the protection of ground water, including the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (Figure 2). The federal pesticide legislation relating to pesticides is FIFRA. EPA focuses on the use of FIFRA authorities to address concerns on pesticide contamination of underground aquifers. The following

information is a summary of the EPA federal acts that provide the legal authority for the implementation of the PMP.

**7 U.S.C. §136 et seq.****The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)**

FIFRA is the basis for the regulation of pesticide registration and use. Through FIFRA, EPA is able to address the management of pesticides for ground water protection. Through a cooperative agreement the legal authority is transferred to the state level. The Office of Pesticide Programs (OPP) (Figure 2) implements this law.

**33 U.S.C. §466 et seq.****Clean Water Act (CWA)**

CWA is the basis for the protection of the surface and ground waters of the nation. Through grants the states have developed programs such as nonpoint source pollution and wellhead protection programs. The Office of Water Regulations and Standards (OWRS) and the Office of Ground and Drinking Water (OGDW) (Figure 2) implement this program.

**42 U.S.C. §300f et seq.****The Safe Drinking Water Act (SDWA)**

SDWA is the basis for drinking water supply protection. EPA has the authority to establish national drinking water quality standards (MCLs) and public water supply monitoring requirements. SDWA amendments give the states the authority to administer these programs, and to establish public water supply wellhead protection programs and to establish sole source aquifers. The Office of Ground and Drinking Water (OGDW) (Figure 2) implements this program.

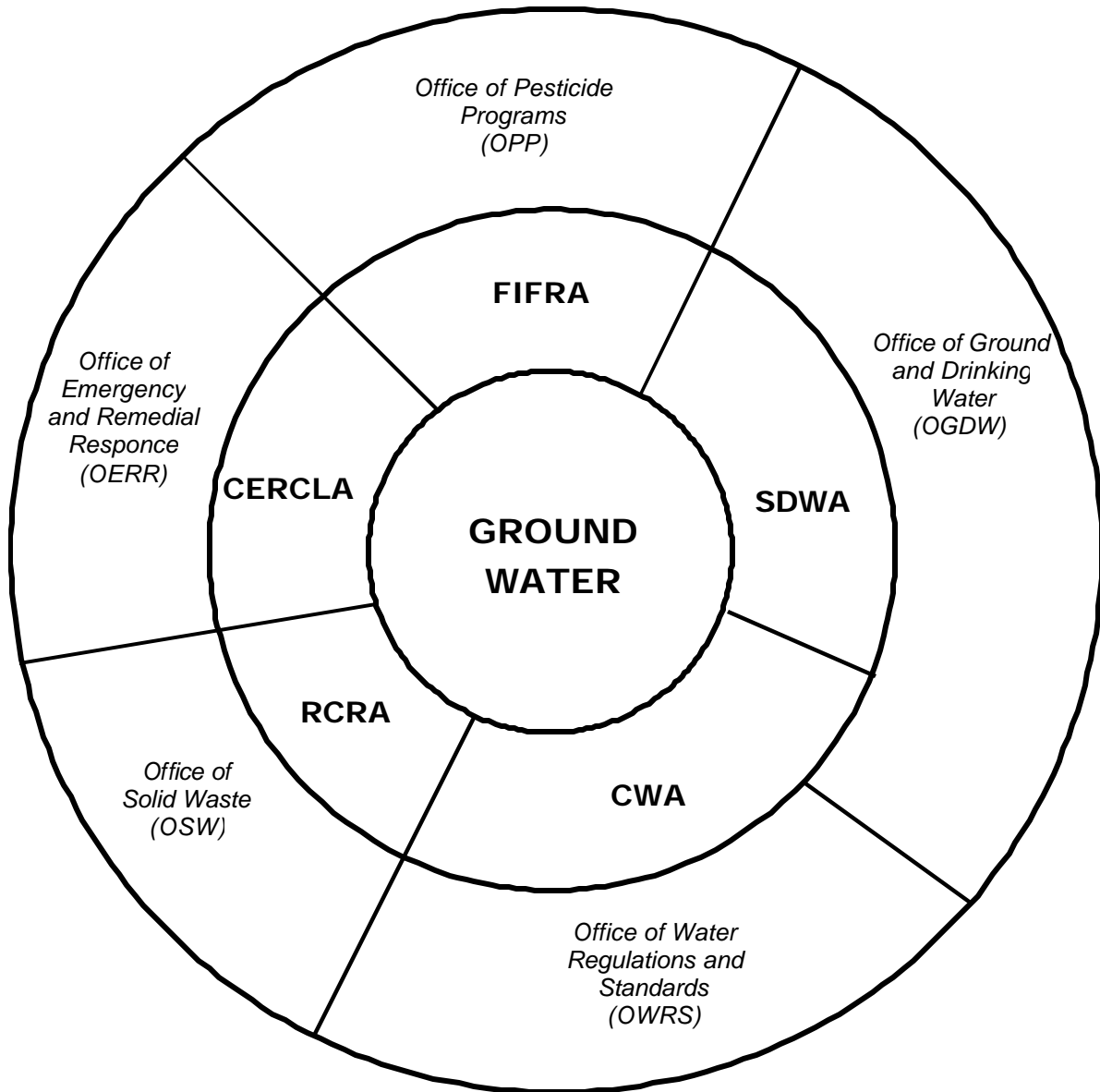
**42 U.S.C. §6901 et seq.****The Resource Conservation and Recovery Act (RCRA)**

RCRA is the basis for the regulation of hazardous wastes including the disposal of pesticide wastes such as canceled, suspended, and unusable pesticide compounds. The Office of Solid Waste (OSW) (Figure 2) implements this program.

**42 U.S.C. §9601 et seq.****The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**

CERCLA is the basis for the establishment of a fund to deal with contaminated sites. CERCLA provides for the recovery of damages from liable parties involved with contamination. The Office of Emergency and Remedial Response (OERR) (Figure 2) implements the program.

### EPA OFFICES WORKING TO PROTECT GROUND WATER



**Figure 2. EPA Offices and associated federal acts currently working to protect ground water.**

**B. Existing Programs**

There are several offices in EPA Headquarters which oversee the above programs (Figure 2). The Office of Pesticide Programs (OPP) administers FIFRA, while the Office of Water (OW) administers the CWA, and SDWA. Other divisions of EPA are also responsible for administration of other ground water protection strategies and pollution prevention programs. The *Pesticides in Ground-Water Strategy (October, 1991)* draws from these regulatory authorities and lays the foundation for PMPs.

**C. Role in this Plan**

1. EPA should continue to develop the State Pesticide Management Plan Strategy at the national level.
2. EPA should continue to provide FIFRA funds to the state for the development and implement of PMP plans.
3. EPA should continue to provide guidance documents, which are up to date, to the states on implementation of the PMP plans.
4. EPA should continue to provide technical support, and training for state personnel.
5. EPA should provide for consistent PMP approaches among states, and consistent PMP approval approaches among EPA regional offices.
6. EPA should ensure that their pesticide environmental fate and ground water detection evaluations are continually updated to provide for appropriate data for decision making processes.
7. EPA will review, provide comment, and approve Idaho's Generic PMP and any Pesticide Specific PMPs in a timely manner when submitted by ISDA.

**U.S. Department of Agriculture (USDA)**

Through a number of agencies, USDA provides both technical assistance to individual landowners and a range of incentives that can affect the way landowners choose to manage their land and water resources. The USDA conducts this business through the Natural Resource Conservation Service (NRCS), Farm Services Agency (FSA), and the Cooperative Extension Service (UICES). The USDA also has an agricultural research branch called the Agricultural Research Service (ARS). The U.S. Forest Service (USFS) manages federal forest lands for multiple uses. The following information is a description of the USDA agencies applicable to the PMP including the: Natural Resource Conservation Service (NRCS); Cooperative Extension Service (UICES), Agricultural Research Service (ARS), Farmers Home Administration (FHA), and United State Forest Service (USFS).

### **USDA Natural Resources Conservation Service (NRCS)**

#### **A. Legal Authorities Necessary to Implement this Plan**

None

#### **B. Existing Programs**

The NRCS offers education and technical assistance to private landowners to promote conservation practices for the protection of soil and water quality. The NRCS has a state office, with area offices. The NRCS coordinates with the 51 Soil Conservation Districts in the state, the Idaho Soil Conservation Commission (SCC), the Idaho Division of Environmental Quality (DEQ), tribes, and other state and federal agencies.

NRCS has managed two important ground water protection implementation projects within the state: the USDA Water Quality Demonstration Project in Burley; and the USDA Idaho Snake-Payette Rivers Hydrologic Unit Water Quality Project in Payette. These projects combined the expertise of the NRCS, with the extension capabilities of the UICES, and the cost share ability of FSA to work with agriculture in implementing water quality enhancement practices.

The USDA Environmental Quality Incentive Program (EQIP) is a program that can provide technical support and cost share funding for protection practices to be implemented in high priority areas of the state. EQIP may be utilized to implement preventative processes under PMPs.

#### **C. Role in this Plan**

1. The USDA-NRCS will provide technical assistance to land owners and soil and water conservation districts as a part of the implementation of the Generic and Pesticide Specific PMPs.

2. The USDA-NRCS will incorporate into their processes and documents, where appropriate and necessary, components of the Generic and Pesticide Specific PMPs.
3. The USDA-NRCS will provide technical assistance to the state on existing and new developments related to pesticide, and irrigation water management standards and specifications.
4. The USDA-NRCS will provide support to ISDA on computer modeling of pesticide fate and transport related to ground water protection and PMPs.

### **USDA Cooperative Extension Service (UICES)**

The University of Idaho Cooperative Extension Service (UICES), a division of the U.S. Department of Agriculture, has four regional offices and an office in every Idaho county. These offices of UICES are roughly organized along county lines. The UICES also has numerous extension specialists that perform research and education functions. Pesticides and ground water related specialists are the Water Quality Specialist (Moscow), Water Quality Educator (Caldwell), Irrigation Specialist (Twin Falls), Weed Control Specialist (Twin Falls), Pesticide Coordinator (Boise), Agricultural Engineer (Twin Falls), and the Integrated Pest Management Specialist (Moscow). Each county agent also has a vital role in the PMP processes.

#### **A. Legal Authorities Necessary to Implement this Plan**

None

#### **B. Existing Programs**

UICES offers a variety of ground water quality educational and training opportunities for the agricultural community. Currently the UICES provides training related to: water quality protection; Integrated Pest Management (IPM); proper chemigation; irrigation water management; proper mixing, loading, application, and disposal practices; and the proper use of crop specific crop protection chemicals. UICES is actively coordinating with the ISDA Pesticide Education Specialist who has the main responsibility to design and implement a comprehensive Pesticide Applicator Training Program. UICES publishes crop protection, nonpoint source pollution, water quality BMPs, and ground water protection brochures and information. UICES is also publishing an email and internet based water quality newsletter entitled "Idaho Water Update". PMP information will be placed in this newsletter and posted on the UICES and ISDA websites.



The University of Idaho (UI) research programs may also be important elements to Idaho's PMP. The UI and ISDA will closely coordinate programs, research interests, and budgetary planning to ensure that producer and regulatory needs are met through research and technology transfer.

### **C. Role in this Plan**

1. UICES will utilize its existing educational and outreach programs, and coordinate with the ISDA Environmental Hydrogeologist and Pesticide Education Specialist, and the IASCD Farm & Home\*A\*Syst Coordinator to inform growers and applicators about the requirements of PMPs.
2. UICES will continue outreach programs which inform growers about BMPs and other ground water protection measures.
3. UICES will work with ISDA, USDA-ARS, Agrichemical Professionals and others to determine research needs related to PMPs.
4. UICES will summarize, for use by the agricultural community, relevant pesticide and BMP research related to PMPs.
5. UICES will provide presentations to ISDA, other agencies, and the agricultural community on research results related to PMPs.
6. UICES will coordinate with ISDA, including the Environmental Hydrogeologist, Pesticide Education Specialist, and the IASCD Farm & Home\*A\*Syst Coordinator to create new educational materials and programs related to PMPs.

### **Agricultural Research Service (ARS)**

The USDA-ARS is a leader in the world in conducting irrigation, soils, and water quality research. The result of USDA-ARS basic research has benefited irrigated agriculture throughout the irrigated states and industry. The USDA-ARS Northwest Irrigation and Soils Research Laboratory located in Kimberly, Idaho is a world class facility. The Kimberly researchers are focused on irrigation technologies, crop management, nutrient and pesticide management, and animal waste management.

The mission of the laboratory is to "develop environmentally compatible and economically sustainable new and improved integrated water, soil, plant nutrient, and crop management practices for irrigated agriculture in the United States." One of the key research strategies of the

laboratory is to: “improve water and crop management systems that enhance nutrient and herbicide management and water quality issues.”

#### **A. Legal Authorities Necessary to Implement this Plan**

None

#### **B. Existing Programs**

ARS conducts research related to irrigation water management, pesticide management, and pesticide fate in the environment. In 1997 and 1998 ARS conducted studies related to the fate of alachlor and metolachlor in the vadose zone under different types of irrigation within a bean field. The title of the research is *Comparing deep percolation soil water and solute losses from conventional vs. PAM-managed furrow irrigation*. The ARS will be coordinating with ISDA further with regards to the type of research that will be useful to assist in the state pesticide management plans.

#### **C. Role in this Plan**

1. ARS will work with ISDA, UICES, Agrichemical Professionals and others to determine new research needs related to the state pesticide management plans.
2. ARS will work to summarize and report to ISDA, for use by the agricultural community, relevant research related to state pesticide management plans.
3. ARS will work to provide presentations to ISDA, other agencies, and the agricultural community related to research results related to state pesticide management plans.

#### **Farm Service Agency (FSA)**

The FSA has the responsibility for implementing administrative processes and procedures for contracting, performance reporting, and financial matters, including allocations and program accounting. FSA participates on the NRCS State Technical Committee. FSA also conducts FSA County Committees in partnership with NRCS and soil conservation districts. The goal of the committee processes is to determine from the local level upward, a prioritization processes for determining conservation priorities. FSA works to monitor and analyze administrative and financial performance indicators; provide additional services to support administration of conservation provisions as mutually agreed to with NRCS; assist NRCS with statewide public outreach campaign; and implement appeals and mediation processes for appeals referred to FSA State Committee, in conjunction with county committees and NRCS. Some of the programs that be have overlap with the PMP would be EQIP, CREP, and CRP.

**A. Legal Authorities Necessary to Implement this Plan**

None

**B. Existing Programs**

The FSA has the responsibility for implementing administrative processes and procedures related to local and state level conservation planning; performing contracting, performance reporting, and managing financial matters, including allocations and program accounting related to cost share programs.

**C. Role in this Plan**

Continue implementing administrative processes and procedures related to local and state level conservation planning; performing contracting, performance reporting, and managing financial matters, including allocations and program accounting related to cost share programs. Cost share programs could include, but are not limited to, EQIP, CREPs, and CRP.

**United State Forest Service (USFS)**

The U.S. Forest Service (USFS) is responsible for managing forest and range lands within the National Forest system. In Idaho, the USFS is responsible for federal forests in Region One and Four. Part of their responsibility is related to pest and weed control. The USFS manages forest lands for multiple use. Part of their responsibility is to protect timber resources and to provide for control over tree pests and noxious weeds. They have a responsibility to write National Forest planning documents. They also have a responsibility to ensure that applicators are licensed, and to implement pesticide applications in a safe and proper manner.

**A. Legal Authorities Necessary to Implement this Plan**

None

**B. Existing Programs**

Related programs would be to utilize protection tools in a proper manner to protect resources from pests and noxious weeds.

**C. Role in this Plan**

Implementation and coordination of PMP components related to existing plant protection and weed control programs consistent with the PMPs.

## **U.S. Department of Interior (DOI)**

The U.S. Department of Interior (DOI) has several agencies with natural resource management roles in Idaho. The DOI agencies in Idaho include the U.S. Geological Survey (USGS), Bureau of Land Management (BLM), Bureau of Reclamation (BOR), and the Fish and Wildlife Service (FWS). Each agency has specific land and resource management roles and authorities. Each agency also has specific responsibilities with pesticides and the environment.

## **U.S. Geological Survey (USGS)**

The U.S. Geological Survey (USGS), Water Resources Division, has the principal role for gathering hydrologic information on, and assessing the quality of, the nation's ground and surface water. In Idaho, the USGS has conducted a limited number of monitoring projects for pesticides within aquifer systems. In 1986 Congress appropriated funds for the USGS to begin the National Water-Quality Assessment (NAWQA) Program. The Upper Snake River Basin Project area work began in 1991, and was one of twenty original project sites nation wide. Related to pesticides, the project has produced significant work related to characterizing the type and concentrations of pesticides found in ground water.

In 1996, the USGS began work related to utilizing Idaho statewide ground water vulnerability mapping (Rupert, 1991) work and calibrating these maps with existing ground water nitrate data. The work by Rupert (1997) has provided a methodology for producing probability maps for nitrate and potentially pesticides. The USGS submitted and received funding, through ISDA, from EPA Region X OPP to produce an atrazine probability map for the Upper Snake River Basin ground water system. The project was completed in the fall of 1998. The USGS received funding from ISDA to conduct further probability mapping for atrazine for the Western Snake Plain Aquifer System. The work was completed in the fall of 2000.

### **A. Legal Authorities Necessary to Implement this Plan**

None.

### **B. Existing Programs**

The USGS, through cooperative programs with states, compiles information for planning, developing, and managing the nation's ground water resources. In Idaho, the USGS has conducted significant pesticide and ground water monitoring and assessment programs.

The USGS has signed cooperative agreements with the Idaho Department of Water Resources (IDWR) and ISDA for the various pesticide and ground water projects. The USGS contracts with the Idaho Department of Water Resources to implement the monitoring and some laboratory components for the Statewide Ambient Ground Water Monitoring Program. USGS has contracted with ISDA to conduct atrazine and ground water probability mapping.

Within the Eastern Snake Plain Aquifer in eastern Idaho, the USGS has been charged with implementing a comprehensive water quality project as a part of the National Water Quality Assessment Program (NAWQA). As a part of this project, USGS collects pesticide data for surface and ground water evaluation purposes. The USGS has conducted ground water quality monitoring projects in other areas of the state including the Boise Valley Aquifer and an aquifer east of Ashton.

The USGS has been collecting GIS data layers and evaluating aquifer vulnerability for nutrients and pesticides. ISDA will utilize USGS expertise in evaluating pesticide leaching probability. The USGS project entitled, *Probability of atrazine contamination in ground water of the eastern Snake River Plain aquifer system, Southern Idaho*, began in 1997 and finished in December, 1998. This probability map will be a key tool for preventing and regulating atrazine, along with other similar leachers, to protect ground water quality. A similar project is completed for the western Snake Plain Aquifer system. An assessment of vulnerability methods for central and northern Idaho is being conducted.

### **C. Role in this Plan**

1. Under ISDA's FY97 EPA FIFRA cooperative agreement, ISDA acquired funds for the production of a pesticide specific vulnerability map for the Eastern Snake Plain Aquifer. Similar work was completed for the western Snake Plain Aquifer system. An assessment of vulnerability methods for central and northern Idaho is being conducted.
2. ISDA will utilize the ground water pesticide findings of the NAWQA program and other USGS monitoring programs.
3. USGS will continue to evaluate and supply data associated with the NAWQA program.
4. USGS will have a role as an unbiased professional resource for conducting soil and ground water monitoring evaluation projects, data evaluation associated with pesticide contamination problems in various parts of Idaho, pesticide and ground water monitoring, and pesticide probability mapping.

### **Bureau of Land Management (BLM)**

The Bureau of Land Management (BLM) has the authority to manage public BLM lands for multiple uses. Pesticides are used on BLM lands for weed control and other pest control purposes. Improper and illegal disposal of waste pesticides and containers have created environmental and health concerns. Applications of pesticides on BLM lands must be done safely and in a manner to protect ground water quality.

**A. Legal Authorities Necessary to Implement this Plan**

None

**B. Existing Programs**

Agency vegetation and animal management programs will continue to adhere to state and federal laws and rules with regards to pesticide use and application. Utilization of pesticides by the agency will be done in a manner that will not impact or degrade ground water quality in Idaho.

**U.S. Bureau of Reclamation (BOR)**

The BOR manages numerous dams, reservoirs, and canals in Idaho for irrigation projects. Since the early 1900's, the BOR has implemented irrigation projects in south central Idaho, such as the A&B Irrigation District in Minidoka county. In many areas BOR constructed canal delivery systems, and irrigation tail water return drains. The irrigation delivery canal systems are treated with aquatic and terrestrial herbicides. Within the A&B Irrigation District, the BOR installed production wells to provide ground water to farms for irrigation. Irrigation tail water disposal injection wells were constructed as a part of the A&B irrigation district.

The BOR is involved with vegetation management as a part of the various projects they manage. Pesticide applications are a common part of terrestrial and aquatic weed control. These types of applications are to be done in a manner that does not impact ground water. The agency will assist in preventing and responding to detections of pesticides in ground water that may be the result of their application activities.

**A. Legal Authorities Necessary to Implement this Plan**

None

**B. Existing Programs**

1. BOR vegetation and animal management programs will continue to comply with federal and state pesticide laws and rules.
2. Utilization of pesticides by the agency will be done in a manner that will not impact or degrade ground water quality in Idaho.
3. BOR will assist in preventing and responding to detections of pesticides in ground water that may be the result of their application activities, water delivery project management, and/or injection well activities.

### **U.S. Fish and Wildlife Service (FWS)**

The operations of the Pacific Region of the Fish and Wildlife Service (FWS) includes the following: a regional office in Portland Oregon; 105 national wildlife refuges; 19 national fish hatcheries; 8 ecological services field offices; 20 law enforcement offices (including the National Forensics Laboratory); and 9 fisheries resources offices located in California, Hawaii, Idaho, Nevada, Oregon, Washington, and the U.S. Trust Territories in the Pacific Ocean.

The Pacific Region is engaged in numerous programs to fulfill the Service's mission "to conserve, protect, and enhance fish and wildlife and their habitat for the continuing benefit of the American people." These programs include:

- conserving migratory birds
- protecting and restoring animals and plants that are in danger of extinction both in the United States and worldwide;
- restoring nationally significant fisheries that have been depleted by over fishing, pollution, and other habitat damage;
- providing expert biological advice to other Federal agencies, states, industry, and members of the public concerning the conservation of fish and wildlife habitats that may be affected by development activities;
- enforcing Federal wildlife laws that protect endangered species, migratory birds, marine mammals, and fisheries;
- administering Federal grant money to support specific projects carried out by state fish and wildlife agencies;
- assessing the effects of contaminants on fish and wildlife;
- working with farmers and agriculture agencies to conserve and restore wetlands on private lands.

Within Idaho, the FWS mission is to: protect and restore wetland and upland habitats, study the effects of contaminants on "trust" resources such as migratory birds, provide input on

wetland permits or licenses for hydro electric projects, and protect and restore endangered and threatened species in the Snake River Basin Sub-ecoregion.

**A. Legal Authorities Necessary to Implement this Plan**

None

**B. Existing Programs**

None

**Idaho State Government**

**Idaho State Department of Agriculture (ISDA)**

ISDA has the authority to implement FIFRA through a cooperative working agreement with EPA. Through the state of Idaho Pesticide Law and Rules, ISDA has the authority to regulate pesticides. Within the Division of Agricultural Resources, the agency is charged with the registration of pesticide products, education and licensing of applicators, ground water protection from pesticides, and enforcement to ensure that pesticides are properly used.

ISDA has obligations to prevent contamination of ground water from agricultural chemicals and agricultural activities statutorily through FIFRA, Idaho Pesticide Law, the Idaho Chemigation Law, Idaho State Pesticide Management Plan, and the Idaho Ground Water Rule (1997). Additional authority for ISDA's role in ground water protection comes through the ISDA cooperative agreement with the EPA to enforce the provisions of FIFRA and through joint implementation of the *Idaho Ground Water Quality Plan (1992)*, and the *Agricultural Ground Water Quality Protection Program for Idaho (1996)*.

**A. Legal Authorities Necessary to Implement this Plan**

ISDA implements FIFRA and the Idaho Pesticide Law and Rules. The following sections of the Idaho Pesticide Law are necessary to implement the PMP.

Idaho Code §22-3402(1)

*Pesticide registration requirements*

Any pesticide distributed within the state shall be registered with the department.

Idaho Code §22-3402(2)&(3)

*Registrant filing requirements related to labels*

Registrant must submit pesticide labels, and if needed efficacy data for Special Local Needs (SLNs) or FIFRA Section 24C registrations.



Idaho Code §22-3402(5)

*Registration of a pesticide related to compliance with federal and state laws, and will not cause unreasonable adverse effect on the environment.*

The director may register a pesticide when it is in compliance with federal and state laws and its use will not cause unreasonable adverse effect on the environment.

Idaho Code §22-3402(10)(a)&(b)

*Refusal to register due to registrant noncompliance*

If the pesticide and its labeling and other material required to be submitted do not comply with the provisions of the law or rules the director may refuse to register. If a pesticide does not comply with the provisions of the law or rules, or when necessary to prevent adverse effect on the environment, the director may take action.

Idaho Code §22-3404(1-4)

*Pesticide applicators, classification licensing requirements*

The director may classify pesticide applicator licenses into professional and private applicators.

Idaho Code §22-3404(5)

*Maintain and furnish pesticide application records*

The director may by rule require professional applicators to maintain and furnish records pertaining to the application of pesticides.

Idaho Code §22-3406(2a)

*Pesticide dealers, and restricted-use pesticide record keeping*

The director shall require a pesticide dealer to keep accurate sale and distribution records of restricted-use pesticides or devices as prescribed by rule.

Idaho Code §22-3406(2b)

*Pesticide dealers, and general use pesticide record keeping*

The director shall require a pesticide dealer to keep accurate sale and distribution records as prescribed by rule of general use pesticides.

Idaho Code §22-3406(3)

*Pesticide dealers, and the sale of restricted-use pesticides*

Pesticide dealers shall sell restricted-use pesticides only to licensed professional and private applicators, and dealers.

Idaho Code §22-3408

*Stop sale, use or removal order*

The department may issue and enforce a written stop sale, use or removal order.

Idaho Code §22-3409

*Denial, suspension, or revocation of a license or permit*

The director is authorized to deny, suspend, revoke or modify any license or permit provided for in the pesticide law.

Idaho Code §22-3416

*Cooperation with other agencies*

The director is authorized to cooperate with and enter into agreements with any other state or federal agency in order to carry out the provisions of the pesticide law and rules.

Idaho Code §22-3418(1)

*Restricted pesticide use*

The director may by rule restrict or prohibit the use of pesticides if he finds that the labeled use of such pesticides requires the rules restricting their use are necessary to prevent injury to land, people, animals, crops or the environment.

Idaho Code §22-3418(1)

*Restricted pesticide use*

The areas affected, and the time and conditions of use of such restricted-use pesticides shall be prescribed by rule.

Idaho Code §22-3419

*Procedure for establishing a restricted area*

The director may, under specific means listed in law, issue a proposal to establish a restricted area.

Idaho Code §22-3420(1-16)

*Prohibited acts*

A number of acts are deemed to be prohibited acts. These are related to: labeling, inconsistent recommendations, false claims, operate faulty equipment, unsafe applications, refusal to keep and maintain records, misbranding of pesticides, and refusal to comply with restrictions.

Idaho Code §22-3420(17)

*Prohibited acts*

No person shall use or supervise the use of any restricted-use pesticide or any state restricted-use pesticide without that person complying with the licensing requirements of the law and other restrictions as determined by the director to protect the environment.

Idaho Code §22-3423

*Penalty for operating without a license*

Any person operating as a professional or private applicator or dealer without a license shall forfeit to the state for each day's operation one hundred dollars as a civil penalty and such operation may be enjoined upon complaint of the director.

Idaho Code §22-3423

*Penalty for violations*

Any person who violates or fails to comply with any provision of this law may be found guilty of a misdemeanor, and be subject to a fine, and/or imprisonment. Any person found to be guilty of provisions of this act may be assessed a civil penalty by the department.

Idaho Code §22-3423

*Review of action by director*

Any person who is aggrieved by a final decision in a contested case is entitled to judicial review in accordance with the provisions of the administrative procedure act, chapter 52, title 67, Idaho Code.

## **B. Existing Programs**

ISDA has a number of existing programs which protect Idaho's ground water resources. These programs vary in origin and scope, and are either regulatory, planning or voluntary processes. The key focus of the ground water pesticide programs are ground water protection; ground water monitoring, probability mapping, and education; pesticide registration; applicator education, certification and licensing; pesticide enforcement; chemigation enforcement; worker safety; USDA pesticide record keeping; pesticide container recycling; and waste pesticide disposal. ISDA implements a ground water program which emphasizes pesticide monitoring, contaminant investigations, education, probability assessments, and BMP evaluations. ISDA jointly implements the *Idaho Ground Water Protection Plan (1992)*, and is the chair of the Agricultural Ground Water Coordination Committee to implement the *Agricultural Ground Water Quality Protection Program for Idaho (1995)*.

ISDA has a number of existing programs and regulatory authorities which protect Idaho's ground water from pesticides. Among the programs are pesticide registration, applicator certification and licensing, waste pesticide disposal program, container recycling program, chemigation program, pesticide enforcement program, ground water monitoring program, and the Agricultural Ground Water Coordination Committee.

### **Enforcement**

ISDA conducts a comprehensive pesticide enforcement program to ensure compliance with FIFRA and Idaho Pesticide Law and Rules. Staff are located throughout Idaho and work with applicator, citizens, and the industry in general. Enforcement staff conduct routine inspections of

pesticide dealer facilities and applicators. Staff also respond to misuse complaints. EPA approved standard operating procedures and investigative techniques are utilized. All enforcement cases are processed for possible violations and penalties. Enforcement hearing and penalties can be issued for federal and state law violations related to pesticide misuse, chemigation violations, and water quality contamination.

### **Registration of Pesticides**

For the protection of ground water, ISDA has formal authority to regulate pesticides through the state registration processes. All pesticides sold or used in the state of Idaho must be registered by both the EPA and ISDA. These pesticides may either be registered as restricted use, general use, or state limited use.

General use pesticides are commonly found in home and garden, home improvement, and other retail stores. They may be bought and used by the general public on their own property without training or certification. Restricted use pesticides may be sold only by licensed pesticide dealers and may be purchased and used only by licensed pesticide applicators. State limited use pesticides may be used only under a special permit granted by ISDA. All pesticide use must be done in accordance with pesticide labels. Pesticides registered by ISDA for 24(c) registrations must be reviewed by ISDA's toxicologist and environmental hydrogeologist for evaluation of pesticide fate.

### **Applicator Certification and Licensing**

To ensure that pesticides are used properly, the ISDA has created rules related to the certification and licensing of pesticide applicators. Persons must be licensed to: use or supervise the use of any restricted or limited use pesticide, make custom applications of general use pesticides; or apply a pesticide in connection with their duties as an official or employee of federal, state, or local government. The training program includes several dozen training modules related to specific subjects. Included in the certification processes are exam questions related to ground water vulnerability, pesticide leaching, and the PMP processes.

### **Waste Pesticide Disposal Program**

In 1993, ISDA created a Waste Pesticide Disposal Program to provide for the proper disposal of unusable, and canceled pesticides. The goal of the program is to remove these pesticides from the farm storage facilities to reduce potential impacts to human health, and the environment. In conducting this program ISDA has teamed with the agricultural chemical industry to provide a way to dispose of waste pesticides, including pesticides that were banned by the EPA in the early 1970's. To date the program has disposed of over 131 tons of waste pesticides.

### **Pesticide Container Recycling Program (CROP)**

In 1997, ISDA began a Pesticide Container Recycling Program (CROP) to assist growers in properly disposing of, and recycling empty containers. Growers can take their empty, triple rinsed containers to a local level agrichemical dealer site for chipping or for short term storage. On a routine schedule, ISDA brings a chipper unit to each storage site and the containers that have been properly cleaned are chipped and shipped to a recycling center. The coordinating agrichemical dealers and applicators are working to educate the growers and other users on proper disposal techniques and encouraging them to utilize the container recycling program.

### **Agricultural Ground Water Protection and Monitoring Program**

Idaho agriculture relies on the use of pesticides for crop protection and improvement. Impacts to ground water quality, originating from agricultural nonpoint sources, are a concern throughout the state. The potential for degradation of ground water from agricultural practices is a function of numerous factors including agrichemical properties, physical properties and land management functions of the growing site, and depth to ground water.

The establishment of an agricultural ground water quality monitoring effort is important for the protection of ground water quality in Idaho. The State of Idaho is mandated, under the *Idaho Ground Water Quality Plan (1991)*, and the *Agricultural Ground Water Quality Protection Program for Idaho (1995)* to establish and maintain an Agricultural Ground Water Coordination Committee and the Ground Water Monitoring Technical Committee (GWMTC). The Coordination Committee is responsible for implementing ground water protection related to agriculture in a coordinated manner. The GWMTC is responsible for tracking ground water projects, evaluating ground water quality, and identifying areas in need of ground water monitoring.

The Idaho State Department of Agriculture (ISDA) is responsible, under the *Agricultural Ground Water Quality Protection Program for Idaho (1995)*, FIFRA Cooperative Agreement, and the EPA PMP processes, for monitoring and characterizing pesticide concentrations in ground water. ISDA began implementation of a statistically designed regional ground water monitoring program in 1996 with one pilot project, and in 1997 with four projects. In 1998 and 1999 nine additional regional ground water quality monitoring projects were scheduled. The regional projects are designed to satisfy these state and federal responsibilities and mandates.

Local and enforcement monitoring are also components of the ISDA ground water monitoring program. When pesticide detections of concern are found by ISDA or other agencies, the local

monitoring program is key for determining contamination impacts. Enforcement monitoring may occur due to complaints, investigations, or response to contamination concerns.

### **C. Role in this Plan**

1. ISDA will regulate pesticides to minimize the potential for ground water contamination.
2. ISDA will continue to provide education to pesticide applicators through its certification and training programs. This work is done cooperatively with the UICES, IASCD Idaho Farm & Home\*A\*Syst Program, Agrichemical Professionals, and others.
3. ISDA will be the lead agency for developing, implementing, and enforcing state pesticide management plans, acting as the liaison between EPA, other state and federal agencies, and the agricultural community for this program.
4. ISDA will be the lead state agency in working with the agrichemical and agricultural industry in the implementation of PMPs.
5. ISDA will be the lead state agency in the development and implementation of regional, localized, and enforcement pesticide ground water monitoring.
6. ISDA will be the lead state agency in the development and implementation of ground water pesticide investigative monitoring.
7. ISDA will provide toxicological data and health based information to individuals potentially impacted by pesticides in ground water.
8. As needed, ISDA will seek Memoranda of Understanding/Letters of Agreement with agencies and/or private sector groups involved with implementation of any portion of, or any PMP.
9. ISDA will respond to pesticide contamination complaints and problems, and will assist in identifying appropriate and enforceable methods for mitigating the problem.
10. When there is a pesticide ground water contamination problem, ISDA will be the lead in implementing response actions, plans, and effectiveness evaluation methods to fulfill roles to implement the PMP and portions of the Idaho Ground Water Quality Rule (1997).
11. ISDA will determine which numerical standard will be used as a reference point and will be incorporated into ISDA Pesticide Rule Making.

12. ISDA will seek funding for PMP implementation, including working with the agrichemical industry, to find funding to support monitoring, BMPs, evaluations of BMPs, remediation, education, and other activities associated with PMPs.
13. ISDA will make the determination whether a BMP and/or regulatory action has prevented or reduced contamination in accordance with the PMP and in fulfillment of the Idaho Ground Water Quality Rule (1987). ISDA will report these findings to DEQ, other agencies, industries, and the public.
14. ISDA will continue to assist pesticide users in the proper disposal of waste pesticides, and pesticide containers.
15. ISDA will assist pesticide users in the proper disposal of contaminated material resulting from pesticide spills.
16. ISDA will coordinate the PMP implementation through the Agricultural Ground Water Coordination Committee, which meets quarterly.

### **Idaho Department of Environmental Quality (DEQ)**

The DEQ is responsible for overall water quality protection in Idaho. DEQ is charged with implementing the Clean Water Act and the Nonpoint Point Source Management Program through EPA. DEQ implements the Safe Drinking Water Act and other federal statutes including CERCLA, RCRA, and SARA.

DEQ has the overall role of implementing the Idaho Ground Water Plan (1991). DEQ is authorized to protect ground water quality from agricultural activities and chemicals pursuant to Idaho Code Title 39, Chapter 1, (Idaho Environmental Protection and Health Act). This statute provides the Director with authority to adopt rules and regulations and to take enforcement actions to protect public health and the environment. DEQ is also authorized to protect ground water quality within the Ground Water Quality Rule (IDAPA 16.01.11).

#### **A. Legal Authorities Necessary to Implement this Plan**

None

#### **B. Existing Programs**

DEQ has a variety of responsibilities and programs relative to ground water quality protection from pesticides. DEQ serves on: the Agricultural Ground Water Coordination Committee, chairs the Cooperative Agreement Meeting group (DEQ, IDWR, and ISDA); chairs the

Ground Water Monitoring Technical Committee; implements the Clean Water Act and Safe Drinking Water Acts for the EPA, manages the public drinking system and source water assessment programs under the Safe Drinking Water Act (SDWA); and implements the Ground Water Quality Rule (1997)

### **C. Role in this Plan**

DEQ will coordinate with ISDA on:

1. DEQ will serve on the Agricultural Ground Water Coordination Committee to interact on the implementation of the PMP.
2. DEQ will chair the Coordinated Agreement Meeting group (DEQ, IDWR, and ISDA).
3. DEQ will chair the Ground Water Monitoring Technical Committee.
4. DEQ will coordinate with ISDA on monitoring projects related to pesticides and nonpoint source impacts.
5. DEQ will manage the public drinking water system and source water assessment programs under the Safe Drinking Water Act (SDWA) while supplying any pesticide data to ISDA.
6. DEQ will manage and implement the Ground Water Quality Rule (1997) in coordination with ISDA and ISDA's authorities and responsibilities with FIFRA, and the PMP process.
7. DEQ will coordinate with ISDA as ISDA determines which numerical standard will be used as a reference point for use in implementing the PMP.
8. DEQ will coordinate with ISDA as ISDA leads the effort to make determinations whether a BMP and/or regulatory action has prevented or reduced contamination in accordance with the PMP and in fulfillment of the Idaho Ground Water Quality Rule (1987).

### **Idaho Department of Water Resources (IDWR)**

The IDWR is responsible for laws, rules, and programs related to water rights, adjudication, surface hydrology, stream flows, stream gauging, statewide ground water quality monitoring, injection well regulation, well drilling and abandonment, water resources planning, ground water management zones, GIS, dam safety, and agricultural energy efficiency. A number of these programs have some relationship to pesticides including: statewide ground water quality monitoring, injection well regulation, well drilling and abandonment, and agricultural energy efficiency.



**A. Legal Authorities Necessary to Implement this Plan**

None

**B. Existing Programs**

IDWR will coordinate with ISDA on how the pesticide and ground water protection aspects can fit into the statewide ground water quality monitoring program, injection well regulation, well drilling and abandonment, and agricultural energy and irrigation efficiency programs.

**C. Role in this Plan**

1. IDWR will serve on the Agricultural Ground Water Coordination Committee.
2. IDWR will serve on the Coordinated Agreement Meeting group (DEQ, IDWR, and ISDA).
3. IDWR will coordinate with ISDA on how the statewide ground water quality monitoring program can be coordinated with the PMP processes.
4. IDWR will coordinate with ISDA on how the injection well regulation program can be coordinated with the PMP.
5. IDWR will coordinate with ISDA on how the well drilling and abandonment program can be coordinated with the PMP.
6. IDWR will coordinate with ISDA on how the agricultural energy efficiency program can be coordinated with the PMP.
7. IDWR will coordinate with ISDA on how the EDMS program can be coordinated with the PMP.

**Idaho Soil Conservation Commission (SCC)**

The SCC was created by the Idaho Legislature in 1939. The SCC has the authority to organize Soil Conservation Districts (SCDs) and to provide assistance and guidance to the Supervisors of Districts in order to enhance their capabilities in carrying out effective local conservation programs (Idaho Code 22, Chapter 27).

The SCC is composed of five members appointed by the Governor for five year terms and administers the 52 SCDs throughout the state. The SCC operates through the local SCDs and does not have direct regulatory authority or licensing authority over water quality or pollution control.

The SCC has roles and responsibilities related to: implementing the Best Management Practices Committee, and the BMP Effectiveness Subcommittee; reviewing updates on NRCS component practices, coordinating with SCDs and NRCS on Preliminary Scoping processes to evaluate impacts to ground water quality in areas where there are impacts;

**A. Legal Authorities Necessary to Implement this Plan**

None

**B. Existing Programs**

The SCC will utilize existing programs under the Agricultural Pollution Abatement Plan (1993) to implement BMP approaches in a voluntary manner related to pesticide contamination concerns. The SCC works with SCDs and NRCS in getting this work done.

**C. Role in this Plan**

Provide leadership at the state and SCD level for implementing a variety of conservation programs with agriculture and pesticide users related to PMPs. The SCC will be involved with the SCDs and NRCS at the state and local levels to plan and implement programs related to voluntary processes. The focus will be to evaluate and promote the use of Best Management Practices (BMPs) that will protect ground water from pesticides. The approach will include: working with SCDs and NRCS; working with SCDs and leading the Preliminary Scoping processes; implementing cost share programs; conducting surveys, investigations, and research; demonstration projects; implementing BMPs; and conducting evaluations of projects.

1. SCC will work with the ISDA, NRCS, and SCDs to organize and conduct Preliminary Scoping and Response processes to evaluate impacts to ground water quality in areas where there are impacts. This work will be done based on data results from ISDA, DEQ, IDWR, and/or USGS data.
2. SCC will work with the SCDs and NRCS to implement conservation programs and BMPs to improve ground water quality related to pesticides.
3. SCC will work to evaluate the effectiveness of conservation programs and BMPs that are applied related to pesticides.

4. SCC will work with ISDA to develop measurement processes for success of programs that are implemented in the voluntary or regulatory mode.
9. SCC will chair and hold regular quarterly meetings related to the BMP Technical Committee, and the BMP Effectiveness Subcommittee.
10. SCC will manage the processes of revising the standards related to pesticides.

### **Soil Conservation Districts (SCDs)**

The Soil Conservation District Law, Idaho Code, Title 22, Chapter 27, establishes the organization and purposes of Soil Conservation Districts (SCDs). The 52 SCDs are governmental subdivisions of the state and include private, state and federal land, with the exception of some incorporated cities and portions of the Idaho National Engineering Laboratory. The Idaho Association of Soil Conservation Districts (IASCD) works to represent all 52 SCDs in Idaho. IASCD works with partners such as ISCC, ISDA, NRCS, and IDEQ in working with SCDs. SCDs provide assistance to private landowners for conservation management, education related to natural resources, develop comprehensive resource management plans, assist land owners in implementing plans, conducts local demonstration projects, adopt and review component practices, and set goals for state and federal programs from the local level.

#### **A. Legal Authorities Necessary to Implement this Plan**

None

#### **B. Existing Programs**

SCD programs include existing state and federal programs related to implementing component practice cost share programs such as EQIP, CRP, CREP, and SAWQP. Also, SCDs implement education and technical support programs for farmers and ranchers.

#### **C. Role in this Plan**

Provide leadership at the district level for implementing a variety of ground water protection programs related to proper pesticide management and the PMP. The SCDs will be involved at the local level to plan and implement programs related to voluntary processes. To implement Best Management Practices (BMPs) related to the pesticides and ground water protection, the SCDs will be involved with leading the preliminary project scoping processes; conducting

surveys; investigations, and research; demonstration projects; implementing BMPs; and conducting evaluations of projects.

1. SCDs will work with ISDA and be responsible for organizing and conducting preliminary scoping processes and response plans to evaluate impacts to ground water quality in areas where there are impacts. This work will be done based on data results from ISDA, DEQ, IDWR, and/or USGS data.
2. SCDs will work with the SCC and NRCS to implement conservation programs and BMPs to improve ground water quality related to pesticides.
3. SCDs will work to evaluate the effectiveness of conservation programs and BMPs that are applied related to pesticides.
4. SCDs will work with ISDA to develop measure processes for successes of programs that are implemented in the voluntary or regulatory mode.

### **University of Idaho Cooperative Extension Service (UICES)**

The UICES, established under the Smith-Lever Act of 1914, was designated as the education arm of the U.S. Department of Agriculture. In 1989 the USDA Water Quality Program designated UICES as having the key role in water quality education and lesser role of technical assistance.

#### **A. Legal Authorities Necessary to Implement this Plan**

None

#### **B. Existing Programs**

The UICES is involved with pesticide registration, certification and training, water quality research and outreach, and implementation of the Idaho Ground Water Plan through the Agricultural Ground Water Coordination Committee.

#### **C. Role in this Plan**

The UICES will work with ISDA on developing educational programs for the PMP, survey tools for the PMP, PMP registration issues, certification and training, water quality research and outreach, and implementation of the PMP through the Agricultural Ground Water Coordination Committee.

1. UICES will work to disseminate research findings to landowners, cooperating agencies, and the general public.
2. UICES will work with ISDA on PMP registration issues.
3. UICES will assist agricultural producers with pesticide recommendations for application of pesticides, especially PMP compounds.
4. UICES will assist with calibration issues related to pesticide application equipment.
5. UICES will work with ISDA on developing educational programs for the PMP.
6. UICES will work with ISDA on sociological surveys, and BMP evaluation tools and protocols for the PMP
7. UICES will work with ISDA on certification and training.
8. UICES will work with ISDA on water quality research including grant proposals, and PMP water quality outreach.
9. UICES will work with ISDA on the implementation of the PMP through the Agricultural Ground Water Coordination Committee.

#### IV. RESOURCES

To adequately demonstrate the ability to formulate and establish a PMP in Idaho, ISDA commits personnel with the appropriate technical expertise to perform the various aspects of PMP implementation. To implement the PMP, ISDA will continue to make assessments of the future personnel, and operational.

Idaho currently has established agency programs related to the protection of ground water, including agricultural ground water protection programs. The individual agency programs contain diverse personnel with technical education and training. The system in Idaho also includes existing and planned agency agreements for program roles and responsibilities and coordination.

#### STAFF RESOURCES

##### Idaho State Department of Agriculture (ISDA)

ISDA has 23.5 full time equivalents (FTEs) dedicated to pesticide management, education, training, enforcement, registration, toxicology, worker safety, monitoring and ground water protection programs (Table 2). These permanent professionals consist of individuals that are educated and trained as agronomists, soil scientists, biologists, horticulturists, entomologists, hydrogeologists, toxicologists, data base and clerical, public information officers, and lawyers. ISDA also hires two to four temporary Water Quality Technicians each year. ISDA also contracts with IASCD and USGS to accomplish PMP components.

ISDA will assess the need for new FTEs. Consideration will be given to create decision units for four Water Quality Analyst conduct field water quality functions, and one Environmental Hydrogeologist to implement PMP work. These positions, if approved, would be filled after July 1, 2001.

Table 2. ISDA PMP Staffing related to current and proposed FTEs.

Activity	Current FTEs	Proposed FTEs or Temporary Employees
Pesticide contamination, ground water and soil monitoring.	1 Agricultural Bureau Chief One 1 Environmental Hydrogeologist 1 Senior Water Quality Analyst 1 Environmental Science Officer 1 Agrichemical Specialists 2 - 4 Water Quality Technicians <sup>1</sup>	1 Hydrogeologist (FY2005)

Ground water data base, and clerical support	1/4 time for One Programmer 1/4 time for One Clerical Specialist 1 Water Quality Technician <sup>1</sup>	
Chemigation system regulation and management.	1 Senior Water Quality Analyst 1 Chemigation Auditor	
Field Investigators	8Agrichemical Field Representatives 2 Agricultural Safety Representatives 1 Supervisor	
Pesticide Case Evaluation	1 Agrichemical Specialist	
Pesticide Registration	1 Agrichemical Specialist ½ Time for 1 Clerical Specialist	
Pesticide Training	1 Agrichemical Specialist	
Waste Pesticide Disposal, and Container Recycling	1 Agrichemical Specialist	
Certification and Training	1Technical Records Specialist 1 Clerical Specialist 1 Supervisor (Same person handling the Pesticide Training)	
Engineering and GIS Services	1 Engineering Manager (Agricultural Engineer, PE) 4 Environmental Engineers (EITs) 1 GIS and Data Specialist	
Toxicologist	1 Environmental Toxicologist	
Information	1 Public Information Officer	
Legal	1 Deputy Attorney General	

<sup>1</sup>The Water Quality Technicians currently staffed are temporary employees working 1385 hours in a fiscal year.

### **Department of Environmental Quality (DEQ)**

This agency is authorized to protect ground water quality from agricultural activities and chemicals pursuant to Idaho Code Title 39, Chapter 1, (Idaho Environmental Protection and Health Act). This statute provides the Director with authority to adopt rules and regulations and to take enforcement actions to protect public health and the environment.

DEQ personnel that can contribute to the implementation of the PMP have technical expertise related to the following program areas: 1 FTE (State Office) working on ground water plan and rule implementation, Ground Water Monitoring Technical Committee, ground water monitoring, development of the nonpoint source data management systems, source water assessment, and reporting of ground water quality data; and some time of approximately 6 FTEs located in

Regional Offices working on ground water enforcement work, monitoring, hazardous waste management, and wellhead protection.

### **Idaho Department of Water Resources (IDWR)**

The IDWR has statutory responsibility for administering the appropriation and allotment of surface and ground water resources of the state and to protect the resources against waste and contamination.

IDWR's personnel that can contribute to the implementation of the PMP have technical expertise related to the following program areas: 2 FTEs (Central Office) statewide and regional ground water monitoring and development of monitoring programs; 1 FTE (Central Office) injection well management and well construction and abandonment; 1 FTE (Central Office) working on agricultural irrigation scheduling; and approximately 6 FTEs (Regional Offices) working on investigations, well drilling and abandonment, and other water allocation and appropriation issues.

### **USDA - NRCS**

The NRCS offers technical assistance to private landowners to promote conservation practices for the protection of soil and water quality. The NRCS has a state office, with regional and area offices. The NRCS coordinates with the 51 Soil Conservation Districts in the state, the Idaho Soil Conservation Commission (SCC), ISDA, and other state and federal agencies.

The state Water Quality Specialist with the NRCS represents one FTE with complete focus on water quality and including pesticide aspects. Other state office staff includes the state agronomist, geologist and engineer. Located in the six NRCS divisions, there are 35 FTEs that are District Conservationists. Staff at the district level may be involved based on local need.

### **USDA-ARS**

The USDA-ARS, in Kimberly, is a leader in the world in conducting irrigation, soils, and water quality research. There are at least 2 scientists that routinely conduct some kind of research related to pesticides and pesticide fate in agricultural soils.

### **USDA Cooperative Extension Service (UICES)**

The UICES has a state Water Quality Specialist located in Moscow. Besides teaching duties, this position has responsibilities related to implementing the PMP. Others with responsibility in



the PMP processes are: a Pesticide Specialist located in Boise; a Water Quality Education Specialist in Caldwell; an Irrigation Engineering Specialist in Twin Falls; an Integrated Pesticide Management (IPM) Specialist in Moscow and all County Agents.

### **Soil Conservation Commission (SCC)**

The SCC is responsible for committee work and has staff that will contribute to implementing the PMP. The SCC has roles and responsibilities related to: implementing the Best Management Practices Technical Committee, and the BMP Effectiveness Subcommittee; reviewing updates on NRCS component practices, and coordinating with SCDs and NRCS on Preliminary Scoping processes to evaluate impacts to ground water quality in areas where there are impacts. One FTE from the central SCC office is assigned to implement the Best Management Practices Technical Committee, and the BMP Effectiveness Subcommittee. SCC has 15 Water Resource Conservation Specialists located throughout Idaho. These staff members will also be involved with technical issues in their respective local areas.

### **U.S. Geological Survey (USGS)**

The USGS, through cooperative programs with Idaho state agencies will be involved with the PMP. USGS has two FTEs that conduct ground water monitoring or ground water probability mapping projects. USGS has other field staff that could be utilized as part of a cooperative project to evaluate ground water quality on a statewide, regional, or local level. These positions work to collect samples, compile data, evaluate data, conduct leaching probability mapping, and report on the status of ground water resources in Idaho.

## **Program Related Resources**

### **Research Resources**

Various state and federal agencies in Idaho conduct research related to pesticides and ground water protection. There is potential for pesticide registrants or private sector to conduct research in Idaho related to pesticide registration requirements. Determining the fate and transport of pesticides in Idaho soils, under proper irrigation and farming practices, is important for determining ground water protection strategies. Based on need, ISDA will work with various partners to conduct pesticide and ground water related research. The funds would come from a combination of sources including: RC-RCDP Fund that the SCC currently utilizes, pesticide registration fees, the legislature, and registrants.

The agencies that are and may be conducting research that will benefit agriculture and the PMP are: University of Idaho; including but not limited to the departments of Plant and Entomological

Sciences, Geology and Hydrology, Agricultural Engineering, Civil Engineering, and Biochemistry; USDA-ARS in Kimberly; U.S. Geological Survey; and ISDA.

## **Monitoring Resources**

ISDA currently has general and dedicated funding that is utilized for conducting regional, local, and response monitoring related to pesticides in ground water. A portion of that funding is being utilized for ground water and pesticides Best Management Practice (BMP) evaluations. Current operating budget is approximately \$210,000 of general fund money for all ISDA ground water monitoring programs. The majority of the funds are spent on the testing of ground water for pesticides residues. ISDA will be assessing sources of funding to pay for monitoring well installation, sampling and laboratory testing. ISDA has at times utilized about \$15,000 per year of EPA OPP FIFRA funding to pay for immunoassay (ELISA) testing associated with the Statewide Ground Water Monitoring program that IDWR manages. ISDA will work to develop new funding sources that will benefit the development of an agrichemical research and BMP evaluation program.

IDWR has about \$350,000 total of general fund money that is spent on the Statewide Ground Water Monitoring program. A portion of that is spent on pesticide sample collection and analyses. In addition, IDWR has received some years, through ISDA, approximately \$15,000 per year of EPA OPP FIFRA funding to pay for ELISA testing.

## **Vulnerability/Probability Resources**

The USGS has been collecting GIS data layers and evaluating aquifer vulnerability for nutrients and pesticides. ISDA has utilized USGS expertise in evaluating pesticide leaching probability. The USGS project entitled, *Probability of atrazine contamination in ground water of the eastern Snake River Plain aquifer system, Southern Idaho*, began in 1997 and was finished in December, 1998. A similar map for the western Snake Plain system was finished in the fall of 2000. An assessment of vulnerability methods for central and northern Idaho is being conducted. These probability maps will be a key tool for preventing and regulating atrazine, along with other similar leachers, to protect ground water quality.

## **Registration Resources**

ISDA has a full time Agrichemical Specialist that manages the registration program. An ISDA Environmental Toxicologist, Environmental Hydrogeologist, UICES staff, and a Clerical Specialist also assist with the program. Various technical specialists from the University of Idaho UICES also work to support the program.

**Information and Education Resources**

ISDA has the lead management role on pesticide licensing, education and recertification. ISDA will work to develop educational programs for the PMP that promote proper use of pesticide products that are of ground water concern. ISDA will work to develop, in partnership with the UICES, and the IASCD, educational programs that promote proper use and prevention of ground water contamination.

The UICES is involved with pesticide registration, certification and training, water quality research and outreach, and implementation of the PMP through the Agricultural Ground Water Coordination Committee. The UICES will work with ISDA on developing educational programs for the PMP, survey tools for the PMP, PMP registration issues, certification and training, water quality research and outreach, and implementation of the PMP through the Agricultural Ground Water Coordination Committee.

The IASCD is the lead on the Idaho Farm & Home\*A\*Syst Program in Idaho. IASCD will continue to play a role in the development of educational materials related to pesticides and ground water. A significant role for IASCD, will be to conduct grower workshops, field days, attend fairs, and to do Farm & Home\*A\*Syst evaluations on farms with pesticide users. EPA OPP Region 10 has provided discretionary money through ISDA to IASCD to lead pesticide education programs through the Idaho Farm & Home\*A\*Syst Program.

**Regulation and Enforcement Resources**

ISDA will implement the PMP enforcement provisions, to prevent and respond to contamination, using existing staff. ISDA utilizes state funding, and matching funds from its cooperative agreement with the EPA. In addition to personnel and operating funds, ISDA also utilizes funds for analytical costs for pesticide investigations related to ground water. Existing staff include 8 Agrichemical Field Representatives, 2 Agricultural Safety Representatives, and 1 Supervisor. The Agrichemical Field Representatives, and the Agricultural Safety Representatives are located in five regions within Idaho. Existing enforcement authority under FIFRA and Idaho Pesticide Law and Rules will be utilized.

**MEMORANDA OF UNDERSTANDING**

To capitalize on the various agency personnel, and the physical and operational components the state intends to utilize memoranda of understanding mechanisms to achieve coordination for PMP development.

Two MOUs address roles and responsibilities for agriculturally related ground water quality programs. The first MOU entitled, "Memorandum of Understanding Implementing the Nonpoint Source Water Quality Program in the State of Idaho", addresses the implementation of nonpoint source water quality provisions of the federal Clean Water Act. The EPA, IDL, SCC, NRCS, DEQ, ISDA, IDWR, UICES, FSA, BLM, and the USFS signed this MOU. Through an appendix to this MOU, signatories further agreed to implement the Agricultural Pollution Abatement Plan (1991) by the directives included in the Ground Water Quality Plan, 1992, and to provide assistance in the development of PMPs.

The second MOU, under development, is entitled "Memorandum of Understanding Between the DEQ, IDWR and ISDA Related to the Implementation of the Ground Water Quality Plan for the State of Idaho". The Ground Water Quality Plan directs the development of the MOU to specifically address the roles of the ISDA, IDWR, and DEQ in the implementation of the Ground Water Quality Plan which includes agricultural activities and agricultural chemicals as they relate to ground water.

## **V. GROUND WATER ASSESSMENT AND PLANNING**

This section describes what the state will utilize to evaluate the potential for pesticide impacts to ground water. Idaho has a great deal diversity with regards to climate, geology, soils, aquifers, and agricultural or land use practices. This section contains a description of the ground water assessment and planning processes that will be used as a part of the PMP. Site-specific characteristics will be researched and further evaluated when the demand is present.

### **Ground Water Resources of Idaho**

#### **General Geology of Idaho's Ground Water Resources**

Within Idaho the major aquifer types are unconsolidated alluvium, Columbia River basalt, Snake Plain basalt, and mixed sedimentary/volcanic rocks (Figure ?)(figure from Neely). Ground water basins in Idaho have been designated by various authors. Based on hydrologic unit basin data (USGS, 1975) and existing hydrogeologic data, Graham and Campbell (1981) created a map consisting of 70 ground water basins. The current ground water map created by Neely (1994) was prepared using a variety of sources. The current map utilized for the Statewide Ambient Ground Water Monitoring Program, consists of 22 ground water regions called hydrologic subareas.

Throughout Idaho the aquifer types are very heterogeneous (Neely, 1994). Due to homogeneity within aquifer types Neely (1994) was able to combine specific hydrologic units and ground water basins into 22 mostly homogeneous ground water subareas. Each subarea contains a dominant ground water or aquifer type. There are aquifer systems that are tiered such as the Boise Valley shallow and a deep aquifer system.

#### **Use and Value of Idaho Ground Water Resources**

Ground water is an extremely important resource throughout the state of Idaho. Idaho ranks third in the nation for ground water volume use. These uses include crop irrigation, stock watering, aquaculture, and industrial, and domestic. Even deep aquifers are tapped for their geothermal properties.

More than 96% of the state's population relies on ground water as their source of drinking water. It would be difficult to find an inhabited area in the state where ground water is not being used for drinking water. Ground water provides drinking water for transient populations even in remote areas of the state such as for forest service campground wells.

In addition, ground water is recognized for its important contribution to surface water flows throughout the state. Many streams within the state rely on ground water for base flow, and thus the quality of the ground water can and does directly impact the quality of surface water throughout the year.

Given the widespread use and importance of ground water in Idaho, the state's basic philosophy of protecting all ground water is very important. By taking this approach, in addition to a preventative approach that protects existing high quality, most other beneficial uses are also protected.

### **Geological and Ground Water Maps**

USGS topographic maps, at 7.5 minute and 15 minute scales, are available through the Idaho State Geological Survey. The maps show elevation, topography, township-range and section, roads, canals, water bodies, towns, and cities and other important features. These maps are used as base maps for various studies. The Idaho Geological Survey also has available reconnaissance and detailed surficial and bedrock geologic maps. These maps show the distinct geological features of Idaho's geology and hydrogeology. These maps will be used to determine geological and hydrogeological boundaries when conducting studies.

Hydrogeological or ground water maps have been created for the state by a variety of agencies including the USGS, IDWR, and Idaho State Geological Survey. These maps are created at a variety of scales. Most common map scale is 1:500,000, and 1:250,000. These maps are used by ISDA to delineate hydrogeological boundaries for subarea strata delineation. These maps are used to design and plan regional, and local monitoring projects. These maps may assist staff while planning investigations and implementing voluntary or regulatory strategies.

### **Land Use Maps**

Various agencies have created land use maps at various scales for land management purposes. Maps of these types are of great use in a PMP ground water assessment processes. For Idaho land use maps are overlain on an USGS topographical map and usually depict the land use relative to irrigated, nonirrigated, grazing, dryland agriculture and other classifications. ISDA currently utilizes agricultural land use classification maps created by IDWR and NRCS to determine boundaries for monitoring studies and evaluations of pesticide application areas.

### **Ground Water Vulnerability and Probability Maps**

Geographical information systems (GIS) are useful tools for visualizing the potential impact of land use activities on ground water. A ground susceptibility/vulnerability map has been created in Idaho using a GIS processes. Rupert et. al, (1991) created a ground water vulnerability assessment for the Snake River Plain in southern Idaho. The effort utilized a modified DRASTIC method to assess the vulnerability of ground water systems in southern Idaho. This mapping processes entailed the compilation and evaluation of relevant data including depth to ground water, availability of recharge and soil types. The data was combined using GIS technology to produce maps that indicate the potential for movement of any contaminant to ground water. Although valuable, this method of mapping was not contaminant specific.

Since 1996, contaminant specific probability mapping processes have been developed in Idaho. Rupert (1997) worked to evaluate nitrate-nitrogen probability for a portion of the eastern Snake River Plain aquifer system. Rupert (1997) calibrated nitrate-specific ground water probability maps by correlating ground water quality data to hydrogeologic and anthropogenic factors such as depth to water, land use, and soils data. The work produced statistically accurate nitrate contaminant maps of the eastern Snake Plain Aquifer system.

Building from the nitrate probability work, Rupert (1998) found that atrazine probability maps could be produced using similar methods. For the atrazine maps Rupert (1998) utilized: depth to first encountered ground data (Maupin, 1991, 1992); land use data developed by IDWR; state Soil Geographic Data Base (STATSGO) soils data developed by NRCS; and a atrazine input data layer. An atrazine probability map for the eastern Snake River Plain was produced by correlating atrazine ground water monitoring data with depth to first encountered ground water, land use, and soils data layers using a GIS. Nonparametric statistical techniques such as logistic regression, principal component analysis, and Wilcoxon rank-sum tests were utilized to evaluate relations between atrazine detections and data layers. The work was very successful, and strong correlations were found amongst most tested parameters. Building on work by Rupert (1997, 1998) Donato (2000) completed similar probability mapping work for the western Snake River Plan Aquifer. Further work is being conducted in 2003 by Boise USGS staff to assess how to perform probability mapping for Northern Idaho aquifers. Findings and recommendations will be provided to ISDA in a 2003 report by USGS.

ISDA will utilize these atrazine probability maps to prevent and respond to pesticide impacts to ground water. ISDA will use the probability maps to implement the general and chemical specific PMPs. The current maps, and any future products will be used to predict leachability for pesticides that have similar chemical and physical characteristics as atrazine. Other pesticides include, but are not limited to cyanazine, simazine, propazine, prometon, bromacil, dacthal, metolachlor, alachlor, metribuzin, and diuron. In areas where there is no coverage with the probability mapping products, ISDA will utilize a combination of the historic vulnerability map (Rupert et. al, 1991), geological and soil information, pesticide use information, and ground water pesticide data if any exists.

The probability maps will be used for: determining areas of highest and lowest probability for atrazine leaching and leaching of other pesticides; providing a tool for efficient implementation of BMPs; focusing educational programs; directing local monitoring; determining locations for pesticide transport modeling; and determining appropriate locations for regulatory responses to elevated detections.

### **Ground Water Quality Modeling**

Computer models may be utilized to evaluate potential for pesticide contamination within the vadose zone and ground water systems. Appropriate models will be selected from commercial or research sources. ISDA will utilize existing data, and probability mapping in the response processes to determine when, where and what type of models could be utilized. Various agencies and/or private sector expertise can be utilized to choose and conduct modeling.

## **Soil Characterization**

### **Formation of Idaho Soils**

Idaho soils have formed under a variety of conditions and parent materials. The NRCS, in cooperation with several other agencies, have extensively cataloged and mapped soils in Idaho through the soil survey group. NRCS publishes comprehensive soil survey manuals for each county in Idaho. ISDA will utilize these publications in the PMP processes. The USGS has utilized these publications in the probability mapping projects. NRCS and other staff will assist ISDA in interpreting these manuals relative to specific land areas that overlie contaminated areas.

### **Pesticide Application and Relevance to Soils**

Soil can serve as a medium where pesticides are processed, treated, or attenuated to reduce or eliminate contaminant potential. The fate of pesticides in soils depends on many factors including soil texture, structure, consistency, drainage class, organic matter content, macropores, microbiology, and depth to bedrock or hardpan.

Understanding soil characteristics and limitations is important when choosing and managing pesticides. Understanding soils, while managing irrigation water, tillage, and residue is important for protecting ground water quality. ISDA will work with various agency and private sector staff, and producers to appropriately utilize soil science theory when determining the fate of pesticides.

### **Soils Maps**

ISDA will rely on NRCS soil survey maps when implement the PMP processes. These maps are published in Soil Survey Manuals for nearly every agricultural county in Idaho. Draft Soil Surveys can be used when the final is lacking. Staff will contact the NRCS state or district offices for more information on Survey Surveys and soils expertise.

## **Pesticide Use In Idaho**

Pesticide use has been an important crop protection tool in Idaho. However, contamination of ground water in Idaho has occurred. Pesticides are utilized extensively in a variety of land use settings including: irrigated, nonirrigated, grazing, and pasture lands, and also in industrial, urban and home owner settings.

### **Pesticide Use Data Sources**

Pesticide use data is important to the PMP processes. ISDA will utilize existing data sources and will work to develop new data sources. Existing data sources include the Idaho Agricultural Statistical Bureau pesticide use data by chemical, crop and county; USDA data bases and the current ISDA/USDA RUP record keeping program; and a 1988 ISDA/UICES survey on pesticide use.



ISDA will work to utilize all three data sources in the PMP processes. With the limitation of each data source or program, the ISDA PMP approach will be to amend existing state pesticide rules to require pesticide data reporting related to pesticides that ISDA determines to be of potential significant impact to the ground water resource. Existing ground water quality data and known health effect information will be utilized to determine which pesticide will have additional reporting requirements.

The extent of the program will be determined by the extent of the problem, however once this requirement is applied to a pesticide the program will be uniform for all such pesticides. Once there is a requirement for a specific pesticide, dealers and applicators would be required to submit use information related to the following facts: pesticide product used; rate; date of use; crop or target applied to; location; irrigation practices; rainfall events after application; and application acreage. The rules for this program will need to be developed and implemented.

### **Monitoring of Ground Water In Idaho**

A major component of ground water assessment and planning under the Idaho PMP is the use of pesticides and ground water quality monitoring. ISDA conducts an extensive ground water monitoring program for pesticides, and utilizes pesticide data from other agencies. Refer to Component VI for further details on the monitoring program.

### **EPA Sole Source Aquifer Designations**

Under the Clean Water Act, EPA has designated two aquifers in Idaho as Sole Source Aquifers. These include the Rathdrum Aquifer in northern Idaho and the Eastern Snake Plain Aquifer in south central and eastern Idaho. The quality of ground water in these areas coupled with the sole source nature of these aquifers has prompted the listing of these two aquifers. These designations have implications for Idaho agriculture and the importance of proper pesticide management to protect ground water. ISDA's PMP processes will provide for special assessment and planning considerations with regards to pesticide prevention and response programs in these areas. Additional prevention programs will be conducted in these areas to educate applicators. Specific leachable pesticides will be of interest in these areas.

### **Ground Water Quality Rule (1997)**

Within the Ground Water Quality Rule (1997) passed by the Idaho State Legislature, there is a section related to aquifer categorization. Within the section, all aquifers are currently designated as general use aquifers except for the Rathdrum Aquifer. There is a process for petitioning the Idaho Board of Environmental Quality to have aquifers designated as Special Resource (Sensitive) Aquifers. There are a variety of criteria for creating new aquifer categories including if an aquifer or a portion of an aquifer is of high quality or in potential jeopardy of being degraded (Ground Water Rule 1997). Under the PMP processes, ISDA will evaluate the need for additional protection measures relative to pesticides if aquifers in Idaho become special resource aquifers.

To protect special resource aquifers, the Ground Water Quality Rule (1997) describes that: “in addition to the ground water quality standards in Section 200, the following narrative standard applies: the aquifer shall not be degraded, as it relates to beneficial uses, as a result of point source or nonpoint source activity unless it is demonstrated by the person proposing the activity that such change is justifiable as a result of necessary economic or social development.” From the rule, the definition of degradation is: “the lowering of ground water quality as measured in a statistically significant and reproducible manner.” ISDA will conducting: ground water monitoring within the sensitive aquifer areas, pesticide applicator education, and working with pesticide applicators and dealers to ensure these aquifers have an extra level of preventative protection.

### **Source Water Assessment and Wellhead Protection Areas**

DEQ has an EPA approved Idaho Wellhead Protection Plan (1998). Several public drinking water system wellhead protection plans are underway in Idaho. Additionally DEQ has an EPA approved Source Water Assessment Plan as required under the 1996 Safe Drinking Water Amendments. This process will require DEQ and public water suppliers to conduct source water assessments relative to the recharge areas of public drinking water systems. ISDA will coordinate PMP efforts with these programs. Pesticide use and management in source water assessment areas is of importance to water providers, citizens, and producers. These source water areas will be given additional priority within the PMP system through additional education and monitoring of applicators within these zones. The PMP response process must be followed in a timely manner to protect ground water quality within source water areas.

### **Areas of Drilling Concern**

IDWR is working on implementing areas of drilling concern relative to areas that have contaminated ground water per specific constituents. Special water well drilling and inspection requirements will be required within these areas. ISDA will coordinate the PMP with these efforts.

## **VI. MONITORING**

### **General Overview of Idaho Monitoring Program**

The Idaho Ground Water Protection Act (1989) provided for the creation of the Idaho Ground Water Quality Plan (1992). Within the Idaho Ground Water Quality Plan (1992) the need for conducting monitoring in Idaho was outlined. In order to prevent contamination of ground water, the quality of the aquifers of Idaho must be characterized and tracked over time. Monitoring must occur within discrete aquifer systems, be designed properly, and consist of appropriate analytical tests and quality assurances. According to the Idaho Ground Water Protection Plan (1992), statewide, regional, and local monitoring are to be created in the state. To meet the needs of the PMP, the following section will outline the types of monitoring that will support the PMP, and be necessary for the PMP.

### **Monitoring to Support the PMP**

#### **Statewide Ambient Ground Water Monitoring Program (IDWR)**

The Idaho State Legislature created the Idaho Ground Water Quality Protection Act, and the Idaho Ground Water Council in 1989. The Council created the Idaho Ground Water Quality Plan (1992). A key component of the plan was the establishment of the Statewide Ground Water Ambient Monitoring Program (Statewide Program).

Since 1991 the Statewide Program has monitored annually 400 wells statewide. Since 1994 over 1,500 monitoring sites have been visited. The State Legislature contributes about \$350,000 of operating money per year to the program. The U.S. Geological Survey (USGS) contributes approximately \$200,000 annually and also conducts the field sampling work on contract. ISDA has contributed from \$12,000 to \$18,000 annually since 1994.

The objectives of the program are to: characterize ground water quality of the state's aquifers; identify trends and changes in ground water quality within the state's aquifers, and identify potential ground water quality problem areas (Neely, 1994).

The program utilizes a stratified random sampling scheme because of the heterogeneity of the aquifer systems in Idaho. The major aquifer types are unconsolidated alluvium, Columbia River basalt, Snake Plain basalt, and mixed sedimentary/volcanic rocks (Figure ?)(figure from Neely). As mentioned in Chapter V, 22 hydrogeologic subareas known as strata were created (Figure ?, Neely, 1994). A sample size was determined for each strata utilizing the Neyman optimal allocation method (Neely, 1994). Wells were selected randomly from township/range areas within strata. Starting in 1996, all future statewide program work conducted will have a trend monitoring component.

Wells are sampled and the water is tested for: field parameters, common ion, nutrients, trace elements, radioactivity/radionuclides, bacteria, pesticides, trihalomethanes, and volatile organic compounds. All wells are tested for pesticides utilizing immunoassay technology assay kits. The tests that are performed

are for: atrazine, alachlor, aldicarb, carbofuran, cyanazine, metolachlor, metribuzin, simazine, and 2,4-D. ISDA has paid for some of the analyses for these types of tests. During certain years, the Statewide Program has been able to test a certain number of wells in southern Idaho for pesticides utilizing gas chromatograph (GC) analyses. The work mostly has been done by the USGS laboratory in Denver, CO utilizing the USGS 2001 series GC method.

**A. Legal Authorities Necessary to Implement this Plan**

None

**B. Role in this Plan**

ISDA will utilize the Statewide Program pesticide data, and IDWR's reports to evaluate pesticide concentrations and trends in ground water of the state and within hydrologic subareas of the state. Statewide Program pesticide data have been and will be utilized to statistically assess sample size needs for initiating and conducting regional monitoring in key areas for pesticides. ISDA has and will conduct followup monitoring related to detections of possible concern.

**Safe Drinking Water Act (SDWA) Monitoring**

The state has approximately 3,700 public drinking water systems. About 25-35% of the chemical analyses required of water purveyors are performed by the state's Bureau of Laboratories and the remainder are done by private, certified labs. Currently, all of the data is received in hard copy reports, although some private laboratories have been asking to make submissions on disk. The state is just instituting a standard reporting form, which will facilitate data entry (into a dBASE IV database). Chlorination is not mandated and relatively few Public Water System wells have any other treatment in place, so that monitoring data collected can be used for evaluation of pesticide concentrations. The Public Water System monitoring data has been utilized, along with statewide monitoring results and results from two regional monitoring projects, for the most recent Ground Water Assessment Part of the EPA 305(b) report.

DEQ is working with the public water suppliers in conducting source water assessments. Some of these assessments will rely on existing data for assessment purposes. Others system providers may conduct additional monitoring including conducting pesticide testing. ISDA will work with DEQ and others to implement and utilize pesticide data relative to the PMP.

**A. Legal Authorities Necessary to Implement this Plan**

None

**B. Role in this Plan**

ISDA will utilize the Public Water System and Source Water Assessment pesticide data, and any DEQ reports from this data to evaluate pesticide concentrations in ground water of the state. ISDA will conduct followup monitoring, in a coordinated manner with DEQ and public water providers, related to detections of possible concern.

### **USGS Monitoring**

The USGS is involved with several regional monitoring studies in Idaho. This includes work in the Boise Valley, the Idaho National Environmental Engineering Laboratory (INEEL), with the Idaho Statewide Ambient Monitoring Program (IDWR), and the National Aquifer Water Quality Assessment (NAWQA) project. The NAWQA program conducted a study-unit survey of 700 wells in the Snake River Basin; these wells are also included within the statewide monitoring described above. In addition, NAWQA conducted four agricultural land-use studies, over areas that ranged from 500-2000 sq. mi. Each area was monitored by 30 randomly-selected wells.

#### **A. Legal Authorities Necessary to Implement this Plan**

None

#### **B. Role in this Plan**

ISDA will utilize the USGS data and reports to evaluate pesticide concentrations in ground water contained within the USGS project areas. The USGS pesticide data will be utilized to statistically assess sample size needs for initiating and conducting regional monitoring in key areas for pesticides. ISDA will conduct followup monitoring related to detections of possible concern. ISDA will follow the response flowchart listed in Chapter VIII Response.

### **RCRA and other permitted facilities, or Regulated Point Source Areas**

The state is currently regulating facilities that have soil and/or ground pesticide contamination. Some of these sites might be RCRA or permitted facilities. DEQ has also been working with industry groups to regulate or encourage cleanup of pesticide point source problems at pesticide storage, and mixing and loading sites. Usually monitoring wells are installed and tested.

#### **A. Legal Authorities Necessary to Implement this Plan**

None

#### **B. Role in this Plan**

The ISDA PMP program will consider interaction with these programs when PMP nonpoint source areas overlap into regulated or point source contaminated areas. ISDA will follow the response flowchart listed in Chapter VIII Response.

## **Tribal Lands Ground Water Monitoring Programs**

Ground water ambient monitoring programs on sovereign tribal lands contained within Idaho do occur or will occur under tribal PMPs. To date, only the Shoshone-Bannock tribe has conducted monitoring within the reservation boundaries near Fort Hall, Idaho. The Nezperce, Coeur d' Alene, Kootenai, and Paiute Tribes to date, have not conducted monitoring related to ground water underlying tribal lands. Aquifer boundaries and flow paths do not respect state-tribal boundaries. ISDA will be the lead state contact with each tribe in Idaho to coordinate PMP and pesticide monitoring efforts. For tribes that have traditional hunting, fishing and gathering boundaries that encompass portions of Idaho, ISDA will be the lead and work with these groups to coordinate the PMP processes.

### **A. Legal Authorities Necessary to Implement this Plan**

None

### **B. Role in this Plan**

ISDA will coordinate with the Tribal authorities in Idaho to exchange information and data related to pesticide ground water monitoring and detections. Coordination will be specific to each tribe and the characteristics of each ground water system contained within or beyond their respective boundaries. ISDA intends to coordinate with tribes on ground water and pesticide contamination issues and projects.

## **Monitoring Necessary to Implement the PMP**

### **Regional, Local, and Response Pesticide Ground Water Monitoring**

The establishment of a coordinated ground water quality monitoring effort is important for the overall protection of ground water quality in Idaho. The basis for developing a comprehensive and coordinated monitoring effort can be found in numerous documents including: *Ground Water Quality Protection Act of 1989*; *Idaho Ground Water Quality Plan (1992)*; *Agricultural Ground Water Quality Protection Program for Idaho (1995)*, and the *Interagency Ground Memorandum of Understanding (1996)*.

Through ISDA's state ground water plan authorities and ISDA's FIFRA Cooperative Agreement with EPA OPP for Region 10, ISDA has authority to manage, regulate, and monitor pesticide fate in the environment within Idaho. Through concern over potential contamination of Idaho ground water resources, ISDA began in 1992 to monitor ground water for pesticides. Local and response monitoring was conducted until 1996 when ISDA began a statistically based regional monitoring program for pesticides. ISDA will continue the lead role in implementing regional, local and response pesticide monitoring related to the PMP processes.

### **Purpose of Regional Agrichemical Ground Water Monitoring**

- On a regional basis characterize water quality related to agrichemical contaminants in aquifers, ascertain background conditions, assess present status of ground water quality , and track quality trends over time
- Determine agricultural related land use practices impacts to ground water
- Determine if legal uses of pesticides are contributing to aquifer degradation
- Determine if point source impacts are contaminating ground water
- Provide data to support the PMP which is related to proper management and regulation of leachable pesticides which may impact ground water.
- Provide data for the creation of Pesticide Probability/Vulnerability Maps
- Provide data to support BMP decision making and evaluation processes

### **Scope**

The regional monitoring projects are established for areas determined to have moderate to high potential for contamination from agrichemicals. Existing data, data trends, existing contaminant threat to human health, vulnerability, and knowledge of land use status and/or changes have been used to determine regional monitoring priorities. Each project will consist of yearly monitoring for three consecutive years. Based on information gathered, further monitoring and the type of monitoring will be determined at the end of the three years. Within each project area, additional monitoring may occur beyond the three years. Further monitoring may be in the form of quarterly monitoring, semiannual monitoring, BMP effectiveness monitoring, local monitoring, follow up monitoring, or regulatory monitoring.

### **ISDA's Regional Experimental Design**

To successfully implement this project, a multiple approach will be taken. Each approach will evaluate important variables that will contribute to determining the pollution sources to ground water. Each approach will provide information for determining solutions to pollution sources and types.

The following variables will be addressed in this project:

- Ground water samples will be taken from domestic wells and tested for select agrichemical parameters over several years. Wells will be selected randomly.
- Detailed information about each well (i.e., well log information, depth to water, casing depth, etc.) will be collected.
- Site specific information will be collected related to activities and variables within 1.5 miles of each well tested to evaluate potential impacting variables near each well.

- Up to date GIS layers related to land use, crop type, soils, geology, climate, depth to ground water, and irrigation will be collected and used as a part of a calibration model for pesticides and nutrients.
- Ground water quality data will be utilized in the constituent calibration model.
- Within each project area, pesticide and fertilizer use data will either be collected and/or estimated to determine agrichemical input loading.
- Based on data sources, statistical evaluations will be conducted to interpret and analyze data.

## Sampling Design

### ISDA Regional Pesticide Monitoring

The ISDA regional monitoring projects are located in areas where there is a moderate to high concern that ground water quality is susceptible to degradation from agricultural practices. The sampling design relies on a stratified random sampling framework. To determine the regional strata, the ISDA utilized data and information from various agency reports, along with products created from the Interagency Ground Water Monitoring Technical Committee to determine the regional strata.

The Twin Falls regional project area is considered a strata, and it is one of numerous strata that represent homogenous hydrogeologic units. Under the stratified sampling regime, sections are to be randomly sampled within each strata and one well would be randomly selected per section. The statistical element to be tested is a qualifying well (Table 3). A qualifying well is a well that: has a confirmed well log, has a confirmed owner and location, can be easily accessed, and can be sampled at an outdoor faucet that does not have any filters, surge tanks, chlorination devices, or water softening devices between the well and faucet.

**Table 3.** Project design statistical categories and factors.

Statistical Category	Statistical Factor
Element	A qualifying well
Sampling Unit	A section of land
Population	Sections in each of the regional ground water strata
Frame	Detailed map of sections of land in each of the regional ground water strata

A statistical unit is a section of land (Table 3). A statistical population can be obtained within sections that are within the boundaries of each regional ground water strata (Table 3). A statistical frame consists of maps of sections of land within each regional ground water strata (Table 3).



Each project will consist of an initial monitoring event. Results from this monitoring event will be reviewed. Subsequent annual pesticide monitoring will be determined based on the results. Monitoring for inorganics will continue for a minimum of three years. Monitoring for inorganics and/or pesticides may continue for five years and monitoring beyond that would depend on severity of problem and also the need for BMP effectiveness evaluation. Information gathered from the regional ground water quality monitoring will be used to:

- Ascertain aquifer water quality background conditions
- Assess present status of ground water quality
- Track water quality status and trends over time
- Determine agricultural related land use practices impacts to ground water
- Determine if legal uses of pesticides are contributing to ground water degradation
- Determine if point source impacts are degrading ground water quality
- Provide data to support the Idaho State Pesticide Management Plan (PMP), which is related to proper management and regulation of leachable pesticides which may impact ground water
- Provide data for the creation of Pesticide and Nutrient probability/vulnerability maps
- Provide data to support BMP decision making and evaluation processes

There are numerous aquifer systems underlying areas of Idaho where agriculture is the dominant land use type. These aquifers will be considered strata within the experimental design.

- Rathdrum Prairie Aquifer
- Alluvial aquifer Near Weiser
- Alluvial aquifer in Lower Payette River Valley
- Boise Valley Shallow Aquifer Areas
- Northern Owyhee County
- Basalt aquifers within Jerome, Gooding, and Lincoln Counties
- Basalt aquifers within Twin Falls County
- Basalt aquifer within Northern Minidoka County (mostly within A&B Irrigation District)
- Alluvial aquifer near Burley, ID (Burley Perched Aquifer)
- Sedimentary and volcanic aquifer within West Cassia County
- Sedimentary and volcanic aquifer within East Cassia County
- Intermountain Valley Aquifer Areas
- Alluvial aquifer near Mud Lake
- Alluvial aquifer system along Snake River within Eastern Idaho
- Clearwater Aquifer Areas

Wells will be sampled once per year over a five year period (Table 4). Pesticides will be assessed every other year. A three year baseline is developed to determine the occurrence, concentration, and origin of pesticides and nutrients that exist in the ground water. Once the baseline has been established, then if warranted based on health based criteria, further monitoring for pesticides may occur as warranted to continue to evaluate the resource for pesticide impacts and/or determine BMP effectiveness over time and to continue to track trends over time.

**Table 4.** Listing of regional agrichemical ground water monitoring areas.

Project Name	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
SW Washington, N. Payette Counties	Began	x	X	x	x					
Burley Perched		Began	X	x	x	X				
North Minidoka		Began	X	x	x	X				
Jerome, Gooding, Lincoln		Began	X	x	x	X				
Lower Payette River Valley			Began	x	x	X	X			
Twin Falls			Began	x	x	X	X			
Snake Plain Alluvium			Began	x	x	X	X			
West Cassia			Began	x	x	X	X			
Mud Lake			Began	x	x	X	X			
Rathdrum Prairie Aquifer			Began	x	x	X	X			
Northern Owyhee County				Begin	x	X	X	x		
Boise Valley, Shallow Regional Areas					Begin	X	X	x	x	
East Cassia					Begin	X	X	x	x	
Clearwater Areas						Begin	X	x	x	x
Intermountain Valley Areas						Begin	X	x	x	x
Other Regional Areas						Begin	X	x	x	x

## Analytes to be Tested

### Pesticides

The ISDA regional PMP monitoring program will utilize a variety of pesticide tests. EPA certified laboratories and methods will be utilized. At the University of Idaho Analytical Sciences Laboratory, the pesticide methods to be utilized will include: EPA Methods 507, 508, 515.1, and 531.1 (Appendix ?).

Immunoassay (ELISA) methods may be utilized for a number of compounds for screening or comparison purposes. In some situations a split sample might be taken and analyzed with the gas chromatography (GC) and the immunoassay methods. Any positive ELISA test done alone would be followed up with a GC test for confirmation.

The Manchester Environmental Laboratory (EPA/Washington Department of Ecology) in Port Orchard, Washington and the Idaho Department of Health and Welfare Laboratory in Boise, Idaho can also be utilized for the gas chromatography methods. The Idaho Department of Health and Welfare Laboratory in Boise, Idaho will be utilized for the ELISA (atrazine, alachlor, aldicarb, carbofuran, cyanazine, metolachlor, simazine, and 2,4-D).

### **Nutrients**

Nutrients in ground water of the state are of concern. Nitrate-nitrogen ( $\text{NO}_3\text{-N}$ ) is of concern to infants and pregnant women. Some adults may be susceptible to the effects of nitrate also. The EPA MCL is 10 mg/L. Elevated phosphorus can be of concern for ground water and for interconnected surface water. Nitrate and phosphorus containing compounds are the major nutrients of concern for ground water and interconnected surface water protection.

The following methods will be utilized for nutrient analysis: EPA Method 353.2 will be used for nitrogen-nitrate/nitrite, EPA Method 365.2 for ortho phosphorus, and EPA 365.4 for total phosphorus. The Analytical Sciences Laboratory and various private laboratories in southern Idaho will be utilized for these methods.

### **Common Ions**

Common ions can be used, in conjunction with other data, to determine impacts from agricultural sources. Sulfate and chloride are naturally occurring compounds, but are often indicators of impacts coming from human impacts on the land surface.

The following methods will be utilized for ion analysis: EPA Method 375.4 will be used for sulfate, EPA Method 325.3 for chloride. The Analytical Sciences Laboratory and various private laboratories will be utilized for these methods.

### **Field Parameters**

Field parameters will be used to establish stable well conditions while purging wells and to assist in evaluating water quality conditions. The following parameters will be evaluated to determine ground water quality conditions: pH, Total Dissolved Solids (TDS), Specific Conductance, Temperature, and Salinity.

### **Interview and Well-Site Observation Record**

The ISDA will be assessing the potential impact of pesticides and nutrients on ground water nearby rural domestic wells. During the field portion of the project crews will conduct a survey to inventory the site conditions near and within the immediate vicinity of each sampling site. Part of each site survey will include a portion ISDA staff will fill out and another component will include a portion that the home or farm owner will fill out. See Appendix C for the survey.

## **Data Management and Evaluation**

Project data sources will be analytical data from laboratories, field sheet information, field parameters, site information such as well log data, and survey data from each monitoring site. Data will be entered into the ISDA ground water database for storage and evaluation. ISDA database has been created in MicroSoft Access. Project data will also be available to IDWR, DEQ, EPA and the public in general.

## **Statistical Evaluation of Data**

Following EPA guidance on QA/QC protocols, ISDA will evaluate data and duplicate samples for accuracy and precision. Based on the statistical design for the project, appropriate statistical evaluations will be conducted with project data.

## **Local Monitoring**

Local ground water monitoring involves data collection at the greatest degree of detail or finest resolution. Local monitoring most effectively addresses point(s) of use, and point(s) of contamination. The *Agricultural Ground Water Quality Protection Program for Idaho (1995)* provides a description of the Local Ground Water Quality Monitoring Program. ISDA is responsible for the local monitoring processes related to pesticides.

For the ISDA PMP program, local monitoring involves sampling at and around individual sites of known or suspected contamination. Local monitoring can include Response, Enforcement, BMP Effectiveness, and Pesticide Registration Monitoring. These types of monitoring processes are generally conducted in response to a particular PMP response or regulatory processes where a discreet point of release and zone of contamination can be or needs to be identified.

## **Response Monitoring**

Response monitoring for pesticides will take place when other types of monitoring result in a detection that needs confirmation or a detection of concern. Response monitoring would determine the nature, quantity, and source of ground water contamination in an area where a problem exists. This type of monitoring will be done to determine the extent of a previously identified contamination problem or to gather evidence that might trigger enforcement monitoring.

Response monitoring may occur under a variety of circumstances. The following items represent response monitoring scenarios:

- ELISA detections of any kind; i.e., IDWR statewide data.
- Any GC detections 20% of the reference point. Data from IDWR, USGS, and other groups will be evaluated.
- ISDA regional and local pesticide monitoring.
- Other agency monitoring

### **BMP Effectiveness Monitoring**

BMP effectiveness monitoring is the evaluation phase of the BMP feedback loop. The premise of the feedback loop is that nonpoint source pollution control is achieved through implementation of best management practices and effectiveness evaluation. Integrated systems of BMPs are approved by the state, implemented on the ground on a site specific basis, evaluated through monitoring, and modified as needed to achieve water quality standards.

Water quality monitoring is performed to evaluate the effectiveness of BMPs in protecting water quality and to demonstrate compliance with nonpoint source water quality standards. One method of evaluation is to compare analytical results from representative ground water quality monitoring locations to the ground water quality criteria. Other techniques that may be used in conjunction with ground water monitoring include soil testing, vacuum lysimetry, and related techniques which can provide additional data for the evaluation of BMPs.

Computer modeling is another practice which has applications for BMP evaluation. Ground water protection efforts can be enhanced by utilizing modeling of unsaturated flow, hydrogeology and agricultural chemical transport behavior. When used in conjunction with ground water quality monitoring, this approach will ensure that site specific conditions are appropriately addressed in the BMP design processes. One important area of research should be directed toward identifying and improving monitoring strategies and the collection and evaluation of data on BMP effectiveness.

One of the goals of the Coordinated Nonpoint Source Water Quality Monitoring Program is to provide an organized Coordinated Resource Management (CRM) approach to the collection of data to assess possible trends, status of beneficial uses, and BMP effectiveness. Ground water quality monitoring protocol for BMP effectiveness, developed through the Coordinated Nonpoint Source Water Quality Monitoring Program's expanded Technical Advisory Committee, can establish a consistent approach for determining BMP effectiveness, eliminate duplication of effort, and provide for more cooperative monitoring between monitoring entities.

Protocol should be established for monitoring plan review, development of specific field, laboratory, and data handling protocols, statistical analysis of data, and procedures for assembling data reports. Roles of implementing agencies in coordinating monitoring activities should be clarified in a Memorandum of Understanding (MOU) in order to improve efficiency and reduce duplication of efforts.

## **Enforcement Monitoring**

Nonpoint source enforcement monitoring will occur to respond to known water quality contamination problems associated with any pesticide. Enforcement monitoring will be initiated when there is a detection of a pesticide equal or greater to the reference point. This type of monitoring may be done by sampling various types of wells including domestic, public, stock water, irrigation, and monitoring wells. Data use will include:

- determination of extent of contamination,
- severity of problem,
- notification of those that use the resource,
- implementation of regulatory response, and
- evaluation of regulatory response.

## **Pesticide Registration Monitoring**

Under certain circumstances, ISDA may coordinate with agrichemical registrants in conducting ground water monitoring related to pesticides. If a pesticide is detected at 75% of an EPA Maximum Contaminant Level (MCL) in one well, or at 50% of an MCL in numerous wells, ISDA will follow the response processes (Table 5) to establish a processes with registrants for assistance with ground water monitoring. Assistance may consist of registrants providing funding for GC analysis, or for method development for breakdown products, or for installation of monitoring wells and testing of waters sampled from associated wells.

Registrants may also be involved in conducting pesticide transport studies in Idaho relative to the FIFRA pesticide registration processes. If appropriate, ISDA will coordinate with the registrant, consultants, and EPA in this process.

## **Other Monitoring Program Considerations**

### **Use of Domestic wells**

Well drillers are licensed and must submit a well-completion report which includes lithology, to IDWR. Approximately 5,000 to 6,000 new records per year are received and there are an estimated 80,000 records dating back to the 50's. For records received since 1993, basic data such as depth, casing length, and water level has been entered into an electronic data base, but the bulk of the well records are on microfiche. All wells require permits before they are drilled, and about 30% of the wells are inspected by IDWR. New wells do not require a bacteriological test, but on property transfers, banks require a water sample to be taken for coliform analysis, usually in conjunction with any required septic tank inspection. In addition to being used for statewide and other ambient monitoring discussed above, and for the pesticide monitoring discussed below, domestic and other private wells also play an important role in other types of regional and local monitoring efforts. These include additional ground

water quality characterization often performed in response to detections from statewide monitoring, public drinking water system wells, or other monitoring projects and programs. Idaho is currently attempting to improve and expand its regional and local monitoring efforts through its Ground Water Monitoring Technical Committee. It is anticipated that domestic and other private wells will continue to play a significant, and possibly expanded role in providing ground water monitoring data.

### **Monitoring Wells**

Installation of monitoring wells will be considered in association with a response to detections of pesticides over the designated reference point. After a detection of concern has occurred in domestic wells, then monitoring wells will be needed to further characterize and define the aquifer that is impacted by a specific pesticide. Monitoring wells will be installed as funding is available. ISDA may utilize pesticide registration funds, and possible assistance from the specific pesticide registrant that manufacture and/or markets the specific pesticide in question. Monitoring wells will be installed to IDWR standards and be permitted by IDWR.

### **Point Source Related Activities**

There may be a need to conduct evaluations of potential point source contamination problems as those situations arise. DEQ has the responsibility related to these efforts. Many agricultural chemical companies in Idaho have been conducting voluntary cleanup of their point source problems. ISDA will work through the Agricultural Ground Water Quality Coordination Committee processes to ensure that this area of concern is addressed. Idaho DEQ and EPA have authorities related to these types of concerns. An exemption would be where ISDA has authority related to a FIFRA or state Pesticide Law violation relative to a currently registered product.

### **Protocols, Quality Assurance/Quality Control (QA/QC)**

As a part of the Cooperative Agreement with EPA, the ISDA maintains and regularly updates the EPA Region 10 approved ISDA Quality Management Plan (QMP) and Quality Assurance Project Plan (QAPP). The Pesticide Ground Water Standard Operating Procedures (SOPs) are included in the QAPP. ISDA staff also produce individual project QAPPs. Following these requirements are essential for the collection of samples related to pesticide enforcement activities. ISDA is submitting with this generic PMP, the revised QAPP and SOPs to cover the details of the ground water PMP program. These procedures will be followed for the implementation of the PMP and any Chemical Specific PMP.

### **Laboratory Testing**

The ISDA ground water pesticide samples will be submitted to the University of Idaho Analytical Sciences Laboratory for analyses. The University of Idaho Analytical Sciences Laboratory is EPA

certified for conducting EPA 500 series methods. The university lab has developed low level detection limits relative to many key pesticides already known to exist in Idaho's ground water. Other labs may be used by ISDA or other agencies including the Washington Department of Ecology/EPA Region X Manchester Laboratory in Manchester, Washington; the Idaho Department of Health and Welfare Laboratory in Boise, Idaho; and the USGS laboratory in Denver, Colorado.

ELISA testing may be a part of the testing program for ISDA and other agencies. Currently various agencies are using commercially available ELISA kits. In Idaho, a number of state agencies currently use the Idaho Department of Health and Welfare Laboratory in Boise, Idaho for ELISA testing.

### **Future Nonpoint Source PMP Monitoring Needs**

There are two immediate needs relative to ISDA's PMP monitoring program. They would be additional funding to support enforcement monitoring, and BMP effectiveness monitoring.

The enforcement monitoring will include the installation of monitoring wells and the testing those monitoring wells on a quarterly basis. The funding for these processes could come from: the legislature, pesticide registrants who are manufacturers of the product in question, or a monitoring registration fee on all pesticides registered in Idaho or just the pesticides known to leach to ground water in Idaho. The amount of money needed per year will vary. If there are ten nonpoint source contaminated sites discovered per year then the expense maybe as high as \$150,000 per year.

BMP effectiveness monitoring will take place during the response processes. Funds may be needed to assess the successes of BMPs applied per problem and pesticide use situation. The extent of need is unknown at this time. BMP effectiveness projects may include monitoring well and lysimeter installation and testing, soil testing, and other in-field evaluation processes. Costs could be as high as \$20,000 per project per year. Studies may include evaluating BMPs for one or more years depending on the pesticide use, the crop rotation, and the objectives of the project.

### **Determination of Best Management Practices**

Based on data results, areas containing contaminants of concern coming from agricultural sources will need an evaluation of agricultural or agrichemical practices. Potential changes to practices may need to occur. Either voluntary or regulatory Best Management Practices (BMPs) will need to applied. Farm planning processes will assist in this process. ISDA will work with applicators, landowners, ISCC, NRCS, and ISCDs to determine the type of voluntary BMP to be adopted. ISDA will be the lead in determining the appropriate regulatory BMPs. BMPs recognized under the Idaho APAP will utilized when appropriate. BMPs developed specifically per pesticide and situation will be developed with ISDA leading the process.

### **Determination of Regulatory Components**



Specific areas containing contamination at levels of health concern may warrant regulatory action. Under state or federal mandated Chemical Specific PMPs, there could be regulatory components associated with pesticides which are found to contaminate ground water above a reference point. Existing FIFRA and Idaho Pesticide Law and Rules will be followed. The Generic PMP will serve as a template for Chemical Specific PMPs. ISDA will be the lead agency for determining regulatory components, conducting the evaluation of BMPs and/or regulatory efforts, and determining the effectiveness of BMPs or actions in meeting protection goals. These findings and reports will be submitted to EPA, DEQ, and others as needed.

### **Coordination Among Agency and Industry**

Coordination will occur among state, federal, and local governments as well as with the agricultural industry during the projects. As projects develop, the local agricultural interests and decision makers will be key in the utilizing and implementing the information gathered.

### **Potential For Contamination of Idaho Ground Water by Agricultural Chemicals**

Agricultural production in Idaho has a reliance on pesticides and nutrients. There is potential for ground water to be contaminated by: certain leachable pesticides; nutrients such as nitrate-nitrogen ( $\text{NO}_3\text{-N}$ ), and phosphorus, volatile organic compounds (VOCs), and bacteria. Contamination potential is a function of numerous factors including: agrichemical properties, physical properties and land management functions of the growing site, depth to ground water, and type of contaminant source. Estimates could be made related to the quantity and types of pesticides and fertilizers used by county and by crop, and in some locations by field. This type of information can be difficult to obtain. Relative ground water vulnerability or probability by chemical type may be important to determine locations of highest potential impact.

### **Pesticides of Concern in Idaho's Ground Water**

Pesticides are used to control damaging weeds, insects, and pathogens. In Idaho, due to the great variety of crops grown and crop rotations, numerous pesticide products are used. The majority of pesticide use occurs in field settings. Pesticides are used in greenhouses, nurseries, orchards, industrial sites and homesites. Herbicides are used routinely on noncrop areas for weed control.

ISDA's monitoring program has produced an extensive data base of ground water results. Following the response chart and existing ISDA, IDWR, and USGS data, ISDA has current concerns over a number of pesticides found in Idaho's ground water. Since 1993, the following is a list (in order of frequency) of the pesticide detected resulting from ISDA's monitoring program alone: Atrazine, Atrazine Desethyl, Atrazine Desisopropyl, Simazine, Dacthal, Bromacil, Prometon, Metribuzin, Bentazon, Propazine, 2,4-Dichlorobenzoic Acid, 2,4-D, Hexazinone, Cyanazine, Metolachlor, Alachlor, Diuron, Diazinon, Terbacil, 2,6-Dichlorobezamide, 3,5,6-Trichloro-2-Pyridinol, 2,6-Diethylaniline, Triallate, Carbofuran, EPTC, Aldicarb, Triallate, 5-Chlorophthalimide, and Phthalimide.

ISDA will be seeking to create and implement Chemical Specific PMPs on the following, but not limited to the following pesticides: atrazine, alachlor, metolachlor, simazine, dacthal, bromacil, prometon, metribuzin, bentazon, propazine, hexazinone, diuron, and triallate.

### **Agricultural Chemical Usage in Idaho**

Idaho agriculture benefits from agrichemical use for crop protection and improvement. Pesticides and fertilizers are used in throughout agriculture in Idaho, on dry and irrigated lands. The types and amounts of agrichemicals used vary by crop, soils, and application factors. Agrichemical use, if planned and implemented properly, can benefit crop production while providing minimal risk to human health and the environment. However, when managed improperly agrichemical use can cause impacts to the environment including ground water.

### **Ground Water Use**

The majority of agricultural land in southern Idaho is irrigated, and approximately one half of that acreage is irrigated with ground water. Ground water measurement activities to determine quantity of ground water used, began under the authority of laws implemented by the Idaho Department of Water Resources (IDWR). In 1996 IDWR began requiring ground water measurement in Basin 36. There are approximately 1,200 ground wells used for irrigation in this subbasin.

### **Environmental and Crop Management Factors**

Environmental and crop management factors are quite variable throughout the state of Idaho. These factors are the most important components that influence the fate and transport of agrichemicals in the soil and ground water. Environmental parameters related to climate factors are some of the most important and variable components effecting agriculture and the fate of agrichemicals throughout the state. Each area of the state is unique when climatic factors are coupled with soils, geology, depth to ground water, and the chemical and physical characteristics of agrichemicals. Additionally crop management factors such as crops grown, crop rotations, nutrient and pesticide management, and irrigation water management are also key factors effecting environmental fate and transport of agrichemicals.

The regional ground water data results will be combined with a Geographical Information System (GIS) based processes, and with the wellhead survey information to determine probable areas of ground water concern. The results of this information will be ground checked if necessary prior to BMP implementation.

### **Ground Water Vulnerability**

A number of important aquifer systems in Idaho are moderately to very highly vulnerable from surficial impacts (Rupert et al., 1991). Ground water vulnerability mapping is a key tool to be utilized in

predicting which areas are the most susceptible to contamination. Once adequate chemical specific ground water data is collected, GIS data layers can be utilized in a modeling and statistical processes to produce chemical specific ground water probability maps (Rupert, 1997). These probability maps can be utilized to determine priority areas for agrichemical management improvements. Probability mapping can assist in determining educational needs, best management practices implementation, monitoring, regulations, and land use planning.

### **Information and Educational Processes**

As the individual projects begin, develop, and data sources are collected information and education outreach will be a key to program implementation. For the agricultural community, educational efforts will be a key to assessing and understanding the information created. As data is compiled for each project, statistics and project maps will form the basis for interpreting the information created. Project reports will be created. Project information will be utilized for educational, and potentially regulatory purposes.

## **VII. PREVENTION STRATEGIES**

Prevention of pesticide contamination of ground water is a primary focus of the Idaho PMP processes. Idaho's PMP emphasizes prevention over contamination response and mitigation. Preventative strategies will be followed by ISDA and pesticide applicators at all times. Prevention techniques will occur during information and education efforts, BMP, implementation, and through the initiation and follow through of regulatory responses.

### **Education of Pesticide Users**

ISDA has developed and is implementing a comprehensive pesticide and ground water protection prevention approach that relies on education. The pesticide user is the focus of ground water protection education. ISDA will implement education efforts during the following processes: certification and training; outreach efforts; technical training, BMP implementation; and regulatory control measures.

#### **Certification and Training**

Certification and training will be the main processes to educate applicators that may apply restricted and general use pesticides. The PMP processes will rely on the ISDA Certification and Training program processes for educating applicators on ground water protection (see Section III). Ground water questions related to the PMP and protection are included in core exam questions.

Ground water protection related to pesticides has been a focus of the program for a number of years. ISDA has conducted ground water quality recertification seminars since 1995 in areas where there is a concern over contamination. ISDA's Certification and Training program has numerous training presentations that have covered topics related to the protection of ground water.

#### **Outreach Efforts**

ISDA will work to implement outreach through a variety of mechanisms, including but not limited to: ISDA's Agricultural Ground Water Coordination Committee; ISDA's website; UICES's electronic newsletter and website; UICES programs and personnel; IASCD's Farm & Home\*A\*Syst Program; direct mailings to agrichemical professionals, producers and citizens in areas with pesticide detections; field tours; presentations to commodity groups, associations, and other groups; press releases; public service announcements (PSAs); public meetings; classroom education; the Agriculture In The Classroom Program; the Water Awareness Week Program; NACD's Envirothon Program; and reports and brochures.

## **Enforcement and Outreach**

### **Pesticide Enforcement**

Information and education is a key component of pesticide enforcement. Anytime there are enforcement cases or processes occurring involving ISDA enforcement and ground water staff, ISDA will work with the person(s) involved to follow procedures to implement prevention and response measures. ISDA investigative protocols and procedures will be followed.

### **Pesticide Control Measures and Outreach**

As ISDA follows the response processes (Table 5), the pesticide applicators and professionals, and the community in general will be informed of response, enforcement and/or regulatory efforts. ISDA will utilize existing outreach mechanisms depending on the situation. The goal is to inform and educate the applicators and the public of the pesticide control measures that will be utilized and implemented to respond to a detection, conduct corrective measures, and prevent further contamination.

### **BMPs, Demonstration Programs and Outreach**

As pesticide ground water protection BMP and demonstration programs develop, ISDA will ensure that outreach occurs. ISDA will work through the Agricultural Ground Water Coordination Committee, the SCC BMP Technical Committee, and existing outreach partners and programs to implement appropriate prevention efforts. The UICES, SCD, IASCD, and Agrichemical Registrant programs will be utilized to implement these programs. As BMPs and demonstrations are applied to prevent and respond to a specific type of pesticide concern, producers and the public in general will be informed of BMP implementation and effectiveness evaluations through a variety of appropriate methods listed above.

### **Ground Water and Pesticides Monitoring and Outreach**

Ground water monitoring data and concerns related to pesticide detections will be disseminated by ISDA and partners to producers and the public in general. ISDA will work through the ISDA Enforcement and Ground Water Programs, the Agricultural Ground Water Coordination Committee, the Ground Water Monitoring Technical Committee, and existing outreach partners and programs to implement appropriate prevention efforts. The ISDA staff and UICES, SCD, IASCD, and Agrichemical Registrant programs will be utilized to implement this outreach effort.

### **Ground Water Probability Mapping and Outreach**

The results of the USGS ground water probability mapping projects will be disseminated by ISDA and partners to producers and the public in general. ISDA will work through the ISDA Enforcement and Ground Water Programs, the Agricultural Ground Water Coordination Committee and existing outreach partners and programs to conduct the mapping outreach. The ISDA staff and UICES, SCD, IASCD,

and Agrichemical Registrant programs will be utilized to implement this outreach effort. ISDA in the future will create a probability mapping site on the ISDA website for outreach purposes.

### **Technical Assistance, Research and Outreach**

ISDA will work through the ISDA Enforcement and Ground Water Program, the Agricultural Ground Water Coordination Committee, the NRCS programs, the SCC and SCD programs, and the IDWR's Irrigation Efficiency Program and existing outreach partners and programs to implement outreach related to technical assistance and research. The ISDA, UICES, SCD, IASCD, NRCS, SCC, IDWR, and Agrichemical Registrant programs will be utilized to implement this outreach effort.

### **Information and Education Coordination**

Information and education activities have been a major component of many water quality programs within Idaho in the past. To coordinate PMP education programs, ISDA will utilize the Agricultural Ground Water Education Subcommittee to the Agricultural Ground Water Coordination Committee. This subcommittee was created as a part of the *Agricultural Ground Water Quality Protection Program for Idaho (1996)* which was passed by the Idaho Legislature and signed into law by the Idaho governor at that time.

## VIII. RESPONSE MEASURES

ISDA staff have gained considerable experience working with applicators, dealers, agencies, and citizens in the processes of protecting human health, and the environment while implementing FIFRA. Beginning in the early 1990's, ISDA has had staff trained in hydrogeological and water resources disciplines. Combining the enforcement, registration, toxicology, and ground water technical staff ISDA has the expertise and capability to respond to point and nonpoint source detections of pesticides.

Detections of pesticides may occur in domestic, stock water, irrigation, and public drinking water systems in the state. Under the Idaho Ground Water Quality Rule (1997), all ground water for current or potential future use must be protected from pesticide contamination. Regardless of which state or federal program is responsible for a ground water detection of a pesticide, as a part of the PMP, all detections will be reported in a timely manner to ISDA for an evaluation and response determination. The PMP serves as a state processes to address a prevention and response approach specific to pesticides. ISDA is the lead in implementing the PMP, however this job will be done in coordination of other agencies and the agricultural sector.

### Legal Framework

Under FIFRA, Idaho Pesticide Law and Rules, and the Agricultural Ground Water Quality Protection Plan for Idaho (1996) ISDA is the primary agency responsible for responding to a pesticide detection. ISDA has been conducting regional, local and enforcement monitoring for pesticides in ground water through authorities established through FIFRA, ISDA's FIFRA work agreement with EPA Region 10, Idaho Pesticide Law and Rules, the Agricultural Ground Water Quality Protection Plan for Idaho (1995), and the ISDA, DEQ, IDWR Coordinated Agreement (1996).

Through the Ground Water Plan (1991), Agricultural Ground Water Quality Protection Plan for Idaho (1996), and the ISDA, DEQ, IDWR Coordinated Agreement (1996) DEQ may be involved with sampling, and evaluating pesticide concentrations in ground water. DEQ may also require public drinking water systems to evaluate pesticide concentrations in public drinking originating from ground water through implementation of the Safe Drinking Water Act. Through the Ground Water Plan (1991), IDWR is charged with implementing the Statewide Ambient Ground Water Monitoring Program.

In order for ISDA to respond to pesticide detections, all ongoing and proposed pesticide monitoring must be coordinated and reported to ISDA. Coordination will occur within the framework of the Agricultural Ground Water Coordination Committee, chaired by ISDA, and the interagency Ground Water Monitoring Technical Committee, chaired by DEQ. Both these committees were established by the legislature through the Agricultural Ground Water Quality Protection Plan for Idaho (1996). Notification of monitoring results to ISDA will occur at a minimum quarterly, or more frequently as needed. Timeliness is very important for protection of human health and timely follow up.

### Reference Points

To protect the resource the EPA uses Safe Drinking Water Act (SDWA) based numbers such as Maximum Contaminant Levels (MCLs), Health Advisory Levels (HALs), or other approved health-based reference points to evaluate the effectiveness of federal or state prevention and enforcement programs. Reaching the MCL or other appropriate reference point would be considered a failure of prevention.

There are MCLs, and HALs for a limited number of pesticides. Nearly all pesticides have a Reference Dose (RfD) as set by the EPA. The State has adopted the SDWA MCLs in the Idaho Ground Water Quality Rule (1997). Where no MCL exists, the ISDA will use Health Advisories Levels first if they exist, and then a Reference Dose (RfD) number calculated for a 10 kg child based on the estimated percent of exposure over a lifetime that the average child would receive from drinking contaminated ground water.

### **Response Procedure**

The ISDA response procedure begins when ISDA receives a reliable ground water test result that indicates the presence of a pesticide. Well samples are taken by a variety of agencies including; ISDA, DEQ, USGS, and IDWR. Regardless of program or goal, a positive detection signifies the presence of pesticide contamination of ground water. Samples can be analyzed by a variety of laboratories including: Idaho Department of Health and Welfare, Idaho Analytical Sciences Laboratory, Washington Department of Ecology/EPA Manchester Laboratory, U.S. Geological Survey Denver Laboratory, or a number of private sector laboratories.

When a reliable ground water test result indicates a detection of a pesticide the response processes begins. The well owner/user is notified of the test result in writing, even if no pesticides were detected. Health related and other information will be provided if the information exists. Depending on who took the sample, the responsible sampling party will send a letter with lab sheet(s) explaining the sample results and location to: ISDA, DEQ, IDWR, and Central and Local Health Districts. All sample results should be submitted to the Environmental Data Management System managed by IDWR, and to DEQ for inclusion in the Ground Water Monitoring Technical Committee work.

A detection of a pesticide will trigger a variety of actions depending on the compound detected, the concentration, and the type of well found in. In responding to a detection found at domestic, stock water, and irrigation wells ISDA will be the lead agency. In responding to detections found at public drinking water systems, DEQ is the lead in regulating the water provider. However, the data will be useful for ISDA's PMP efforts. DEQ will fulfill their role in a regulatory fashion under the SDWA, and ISDA will work to determine extent and cause of contamination.

Each detection above the detection limit will result in some type of recommended response. Refer to the response chart (Table 5).



**Table 5. Description of the Response Chart for responding to pesticide detections.**

Contamination Level	Response
<p>Level One</p> <p>At or above the detection limit yet below 20% of the Reference Point</p>	<p>a. ISDA to notify well owner and general public of detection.</p> <p>b. Educate pesticide applicators within area.</p> <p>c. Evaluate use practices, soils, geology, and vulnerability within vicinity of site.</p> <p>d. Evaluate State records for previous point source or potential FIFRA violation concerns.</p> <p>e. Evaluate existing monitoring data within area to check for previous detections.</p> <p>f. Conduct timely outreach in local area applicable to relevant data and information.</p>
<p>Level Two</p> <p>Detection at 20% to less than 50% of the Reference Point</p>	<p>(In addition to 1. a. – f., above)</p> <p>g. ISDA develops Chemical Specific Plan per pesticide, unless already mandated through EPA Rule to do so.</p> <p>h. Monitor additional wells in the upgradient and downgradient area.</p> <p>i. Consider additional monitoring over time.</p> <p>j. Notify and work with registrant, dealers, applicators and producers to determine source(s).</p> <p>k. ISDA FIFRA Inspectors conduct Use Inspections within area of detection(s).</p> <p>l. Evaluate BMPs, change BMPs if needed, determine BMP effectiveness.</p>
<p>Level Three</p> <p>Detection at 50% to less than 100% of the Reference Point</p>	<p>(In addition to 1. a. - h., and 2. g. – l. , above)</p> <p>m. Install monitoring wells.</p> <p>n. Determine effectiveness of BMPs.</p> <p>o. Monitor quarterly for determination of seasonal trends and fluctuations in concentrations.</p> <p>p. Assist home owner with health information and alternatives for attaining a safe water source.</p> <p>q. Obtain pesticide registrant assistance for financial and technical assistance</p> <p>r. Require field level record keeping and reporting.</p> <p>s. Establish a restricted area which would require BMPs.</p>

Level Four  Detection greater than 100% of the Reference Point.	(In addition to 1. a. - f., 2. g. - l., and 3. m. – r., above) t. Establish Use Prohibition Area(s). u. Implement Use Prohibition Area(s). v. Assist homeowner(s) with health information and alternatives for attaining a safe water source. w. Determine effectiveness of regulatory actions.
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The Idaho State Department of Agriculture has the primary enforcement responsibility in the regulation of the usage of pesticides in accordance with FIFRA. Additionally, the Department enforces these rules and regulations according to the Acts listed in Section IV.

The Division of Agricultural Resources has a goal to protect public health, the environment, animals and wildlife species of the state from possible adverse effects which could result from the improper use of pesticides. The Division is also charged with monitoring agriculture's impact on humans and the environment which includes a program for the protection of groundwater. The Division is responsible for assuring compliance with the laws and regulations governing the use of pesticides in Idaho through education and enforcement. The Division is responsible for assuring proper registration and sale of pesticides within the State of Idaho. The Division also inspects and investigates uses and marketers of pesticides to insure their proper use and sale. Individuals must be licensed as private, commercial, or limited applicators to use restricted-use chemicals.

### **Timing of Actions**

ISDA will move as quickly as possible to identify the source of the pesticide contamination. Most sampling is done during the spring through summer months. Laboratory results are received by ISDA after about two to three months from submittal time. The fall and winter months would be spent determining source. Followup and more extensive sample would take place from several months to one year after the initial detection. Regardless of further sampling, ISDA would try to determine source within four to six months after initial detection.

Timing of BMP implementation will vary. Where BMPs are needed, ISDA will attempt to establish new BMPs by the next growing season. If new BMPs require rule making, this time frame may take longer.

The general public will have the opportunity to learn of any ISDA detection of a pesticide in ground water. This will occur through a variety of means including but not limited to: reports, press announcements, workshops, public meetings, public notices, ISDA website, and newsletters. ISDA will attempt to acquire reliable data from other agencies and publicize that information also. ISDA will work with DEQ and public water systems related to notification of all detection information.

ISDA will conduct negotiated rule making in 2003 – 2004 relative to the PMP process. The draft rules would go to the Idaho Legislature in 2005. If there are detections of concern that will require additional

rule making, ISDA will have the options of further negotiated rule or temporary rule making. In the most serious response cases, for example restricted use changes and prohibition area designations, temporary rules would be the preferred option due the rapid response needed. Rule making can be done in a timely manner to implement the PMP. Currently, ISDA does not know of legal, technical, or programmatic issues that could delay measures to establish contamination protection measures.

## **Response and Use of State Pesticide Law**

ISDA implements FIFRA and the Idaho Pesticide Law. The following sections of the Idaho Pesticide Law are important to fully implement a response process as a part of a PMP. These components of Idaho Pesticide Law can be utilized at any time in the response processes.

### **Idaho Code §22-3402(5)**

*Registration of a pesticide related to compliance with federal and state laws, and will not cause unreasonable adverse effect on the environment.*

The director may register a pesticide when its in compliance with federal and state laws and its use will not cause unreasonable adverse effect on the environment.

### **Idaho Code §22-3402(10)(a)&(b)**

*Refusal to register due to registrant noncompliance*

If the pesticide and its labeling and other material required to be submitted do not comply with the provisions of the law or rules the director may refuse to register. If a pesticide does not comply with the provisions of the law or rules, or when necessary to prevent adverse effect on the environment, the director may take action.

### **Idaho Code §22-3404(5)**

*Maintain and furnish pesticide application records*

The director may by rule require professional applicators to maintain and furnish records pertaining to the application of pesticides.

### **Idaho Code §22-3406(2a)**

*Pesticide dealers, and restricted-use pesticide record keeping*

The director shall require a pesticide dealer to keep accurate sale and distribution records of restricted-use pesticides or devices as prescribed by rule.

### **Idaho Code §22-3406(2b)**

*Pesticide dealers, and general use pesticide record keeping*

The director shall require a pesticide dealer to keep accurate sale and distribution records as prescribed by rule of general use pesticides.

### **Idaho Code §22-3406(3)**

*Pesticide dealers, and the sale of restricted-use pesticides*

Pesticide dealers shall sell restricted-use pesticides only to licensed professional and private applicators, and dealers.

Idaho Code §22-3408

*Stop sale, use of removal order*

The department may issue and enforce a written stop sale, use or removal order.

Idaho Code §22-3409

*Denial, suspension, or revocation of a license or permit*

The director is authorized to deny, suspend, revoke or modify any license or permit provided for in the pesticide law.

Idaho Code §22-3418(1)

*Restricted pesticide use*

The director may by rule restrict or prohibit the use of pesticides if he finds that the labeled use of such pesticides requires the rules restricting their use are necessary to prevent injury to land, people, animals, crops or the environment.

Idaho Code §22-3418(1)

*Restricted pesticide use*

The areas affected, and the time and conditions of use of such restricted-use pesticides shall be prescribed by rule.

Idaho Code §22-3419

*Procedure for establishing a restricted area*

The director may, under specific means listed in law, issue a proposal to establish a restricted area.

Idaho Code §22-3420(1-16)

*Prohibited acts*

A number of acts are deemed to be prohibited acts. These are related to: labeling, inconsistent recommendations, false claims, operate faulty equipment, unsafe applications, refusal to keep and maintain records, misbranding of pesticides, and refusal to comply with restrictions.

Idaho Code §22-3420(17)

*Prohibited acts*

No person shall use or supervise the use of any restricted-use pesticide or any state restricted-use pesticide without that person complying with the licensing requirements of the law and other restrictions as determined by the director to protect the environment.

Idaho Code §22-3423

*Penalty for violations*

Any person who violates or fails to comply with any provision of this law may be found guilty of a misdemeanor, and be subject to a fine, and/or imprisonment. Any person found to be guilty of provisions of this act may be assessed a civil penalty by the department.

### Linking Pesticide Law and Rules to PMP Actions

Refer to the following tables for linkages between PMP actions and Idaho Pesticide Law and Rule section and provisions (Table 6, 7).

Table 6. A list of key Pesticide Law provisions related to ISDA PMP actions.

ISDA Pesticide Law Code	PMP Actions
Idaho Code §22-3418(1) <i>Restricted pesticide use</i> The areas affected, and the time and conditions of use of such restricted-use pesticides shall be prescribed by rule.	Implement when a pesticide is deemed to need a Chemical Specific Management Plan
Idaho Code §22-3418(1) <i>Restricted pesticide use</i> The director may by rule restrict or prohibit the use of pesticides if he finds that the labeled use of such pesticides requires the rules restricting their use are necessary to prevent injury to land, people, animals, crops or the environment.	Implement when a pesticide is deemed to need a Chemical Specific Management Plan
Idaho Code §22-3408 <i>Stop sale, use of removal order</i> The department may issue and enforce a written stop sale, use or removal order.	Utilize when a pesticide exceeds the Reference Point
Idaho Code §22-3419 <i>Procedure for establishing a restricted area</i> The director may, under specific means listed in law, issue a proposal to establish a restricted area.	Implement when a pesticide is required to have a Chemical Specific PMP, or a pesticide is greater than 50% but lower than 100% of the Reference Point

Table 7. Potential Ground Water Protection Pesticide Management Practices.

Ground Water Protection Pesticide Management Practices	
Management Practice	Description
Application Setback Areas (Buffer Zones)	Buffer zones may be required near surface water, wellheads, springs, vulnerable areas, bedrock protrusions to limit application in these sensitive areas.
Restriction Based on Soil Type and Monitoring Data	Application of the pesticide may be limited in areas where soil types have limited adsorption and dissipation capabilities, or where there is monitoring data indicating a contamination concern.
Change in Rate of Application	A lower rate of application of the pesticide may be required where the soil has low attenuative abilities.
Change in Method of Application	Application methods that decrease leachability potential may be required; i.e., foliar vs. soil-incorporated application, banding, etc.
Change in Timing of Application	Seasonal changes or yearly limitations in applications may be required.
Chemical and/or Site Specific Pesticide Management Plan	Because of the complex nature of the pesticide application or the presence of sensitive areas, the permit may be contingent upon the presence of a written, site-specific pesticide management plan which has been accepted by ISDA and/or EPA.
Other Restrictions	Additional restrictions may become evident in the course of permit investigation and imposed with site-specific conditions, such as the highly leaching areas.
Moratorium	Product registration and rule changes are made thus creating a localized use moratorium.

## Compliance

ISDA staff inspects and investigates producers, distributors, and users of pesticides to assure proper sale and use of these chemicals. Staff conduct enforcement investigations under the provisions of both state and federal laws through a cooperative agreement with the USEPA. Enforcement staff will be utilized to implement the PMP.

**Chemigation**

The enforcement component of the chemigation program entails conducting audits of irrigation systems used to apply pesticides. The audits evaluate the installation of pollution prevention equipment on the irrigation systems to prevent the agrichemical contamination of surface and/or ground waters. The audits and subsequent follow-up inspections have increased compliance with the laws and regulations while reducing potential agrichemical contamination of the waters of Idaho.

**Case Review**

ISDA conducts formal case review in compliance with FIFRA and Idaho Pesticide Law and Rules. PMP cases will be blended into the enforcement and case review process.

**Penalty Provisions**

If penalties are assessed, ISDA penalty matrix will be followed in the PMP process.

## **IX. ENFORCEMENT**

Through a work agreement with EPA Region X, ISDA has the primary regulatory responsibility in Idaho for implementing FIFRA. ISDA has been working to enforce provisions of FIFRA for ground water quality protection through pesticide registration, certification and training, and enforcement. The proper use of pesticides is essential for effectively protecting the groundwater of the state from agricultural production.

ISDA implements FIFRA and Idaho Pesticide Law and Rules to protect public health, and the environment from possible adverse effects which could result from the improper use of pesticides. ISDA is conducting an extensive ground water quality monitoring program which supplies scientific data which can support possible enforcement action. For PMP implementation, the ISDA ground water quality program will utilize existing ISDA enforcement staff and processes in the enforcement investigations, case review and enforcement actions.

### **Registration**

Under the ISDA/EPA cooperative agreement, ISDA manages the registration of all pesticide products that are sold in Idaho. All pesticide registrations in Idaho must be done in accordance with FIFRA and Idaho Pesticide Laws and Rules. ISDA coordinates with EPA Headquarters and Region 10 offices as well as the University of Idaho and industry to implement this program. ISDA registers pesticides as convention, restricted use, 24(c), Section 18 registrations. All Chemical Specific PMP type products will be registered in Idaho with EPA's conventional restricted use type registration. If products are not registered properly, enforcement action can be taken under federal and state laws and rules.

### **Compliance**

The ISDA FIFRA Enforcement Program inspects and investigates producers, distributors, and users of pesticides to assure proper registration, storage, sale and use of these chemicals. Enforcement investigations are conducted under the provisions of both state and federal laws. Under the ISDA/EPA cooperative agreement, ISDA provides midyear and end of year reports to EPA on progress of all FIFRA programs implemented by ISDA. ISDA provides training sessions in conjunction with the University of Idaho's Agricultural Extension Program and when requested, by grower or dealer groups. The field staff holds pesticide program test sessions throughout Idaho to evaluate and certify individuals to distribute and utilize restricted use pesticides within Idaho. Pesticide regulation violations result in enforcement actions that include warning or regulatory letters and complaints filed by the Deputy Attorney General assigned to the ISDA. DEQ will handle Public Drinking Water System regulatory processes with regards to providers serving water that meets the drinking water standards.



**Chemigation**

The enforcement component of this program entails conducting audits of irrigation systems used to apply pesticides and fertilizer. The audits evaluated the installation of pollution prevention equipment on the irrigation systems to prevent the agrichemical contamination of surface and/or ground waters. The audits and subsequent follow-up inspections have increased compliance with the laws and regulations while reducing potential agrichemical contamination of the waters of Idaho.

**Case Review**

ISDA conducts formal case review in compliance with FIFRA and Idaho Pesticide Law and Rules. PMP cases will be blended into the enforcement and case review process.

**Penalty Provisions**

If penalties are assessed, ISDA penalty matrix will be followed in the PMP process.

## **X. PUBLIC AWARENESS AND PARTICIPATION**

Under the Idaho PMP the user is responsible for the management of pesticides utilized. The pesticide applicator will be responsible for implementing corrective measures to fulfill the Idaho Generic PMP and any Chemical Specific PMPs. These corrective measures or PMP activities must be communicated to the pesticide user, and any agrichemical, commodity, irrigation, or farming groups. City, county, state and federal agencies must also be informed of the PMP requirements or program developments.

### **PMP Workshops**

The pesticide user and public will need to be informed of the PMP processes and requirements. In the development of Pesticide PMPs, workshops will be held in the state to provide information, and receive information from growers and pesticide users. Ground water protection workshops will be held yearly in all regional areas of Idaho. The number, location, and frequency of workshops will coincide with the pesticide use patterns, the severity of contamination concern, and the known need for specific educational topics to be discussed.

### **Recertification Workshops**

Pesticide applicator recertification workshops will be used to convey PMP requirements and information to licensed applicators. Recertification workshops will be used as the primary means to inform users of requirements and information.

### **Workshops**

Information regarding pesticide use and contamination prevention will be relayed to the pesticide user through the existing educational programs for pesticide users. These existing education and technical training programs are established within the ISDA and UICES, and the IASCD Idaho Farm & Home\*A\*Syst programs. These programs are facilitated with the assistance and expertise of the personnel at the ISDA, UICES, and IASCD, and other appropriate agencies.

The ISDA pesticide certification and training programs are designed to ensure that the pesticide user receives information as to the safe use of pesticides. The emphasis is on supplying the most up to date technical information to pesticide users to ensure proper pesticide use for ground water protection. Updated pesticide use information will be developed and collated through the UI research and UICES systems in order to provide the user with the most current pesticide use and regulatory information. Updated industry information will also be utilized when appropriate. The updated technical information will also be processed and evaluated by the IDA technical staff including the certification and training personnel.

The policy of the state of Idaho is to provide information and to encourage public participation in applicable activities related to ground water quality protection (Idaho Ground Water Protection Act, 1991). Public involvement and acceptance of ground water quality protection programs related to

pesticides involves a large cross section of the state's population, rural and urban alike. The public feedback system and the utilization of the various involved agencies is key for PMP implementation.

### **Informational Meetings**

ISDA will hold public informational meetings to inform the general public of the PMP program. ISDA will utilize this effort to educate and then gain input on the program implementation and success. These will be scheduled and planned as needed based on the prevention and response process.

### **Public Input in Generic PMP and Rule Making Development**

ISDA followed public input processes in the Generic PMP development by conducting open public meetings through the Idaho Ground Water Coordination Committee which meets quarterly in Boise. In rule making process, ISDA will follow Idaho Public Meeting Law and the Administrative Procedure Act.

### **Public Input in Chemical Specific PMPs**

ISDA will evaluate the final EPA PMP Rule requirements and the Idaho APAP for developing and allowing the public involvement and participation during the development and implementation of the Chemical Specific PMPs.

## **XI. INFORMATION DISSEMINATION**

Information regarding pesticide use, contamination prevention, and monitoring results will be supplied to the pesticide user through the existing pesticide educational programs. These existing education and technical training programs are established and implemented by ISDA, UICES, IASCD, Agrichemical Professionals, private sector groups, and other entities.

The ISDA pesticide certification and training program are designed to ensure that the pesticide user receives information related to the safe use of pesticides. The emphasis is on supplying current technical information to pesticide users to ensure proper pesticide use for ground water protection.

Teams from ISDA, UICES, IASCD, and private sector will be responsible for updating pesticide educational materials that will meet the needs of the generic and chemical specific PMPs. A combination of mailings, internet use, public and recertification workshops, and field tours will be utilized to disseminate information. ISDA will utilize the expertise of the: UICES Water Quality Extension Agent, the IASCD Farm & Home\*A\*Syst Coordinator, the ISDA Pesticide Recertification Trainer, and ISDA Public Information Officer to conduct the transfer of information to appropriate outlets. Updated industry information will also be utilized when appropriate.

## **XII. RECORDS AND REPORTING PROGRESS**

Record keeping and reporting are the responsibility of the individual programs within the state and local agencies. Within ISDA record keeping and reporting are essential components of all regulatory and management programs. ISDA will follow existing ISDA and EPA enforcement related record keeping requirements as related to pesticide and ground water contamination investigations. In general, ground water quality data for pesticides will be kept long term and reported to the public, agricultural industries, and agencies. Most ISDA records are available during agency business hours.

Monitoring data are to kept within individual agencies and within the EDMS as maintained by the IDWR. This data is also available to the public and to EPA. ISDA regional and local data will be kept within the ISDA Ground Water Quality Database. At a minimum, ISDA will be disseminating the data once per year to DEQ and IDWR for inclusion in the Ground Water Monitoring Technical Committee and the EDMS respectively. ISDA will produce a yearly ground water contamination report to communicate to the public and legislature the type, concentration, and location of pesticide contaminants in ground water.

An ISDA PMP biennial report will be submitted to the EPA. This will be done by ISDA to inform EPA of the progress and effectiveness of the pesticide management programs for ground water protection. This report will: provide an assessment of the status of implementation efforts; provide an assessment of the environmental effectiveness and the level of ground water protection provided by an implemented PMP, and provide information to be used to help ensure national consistency of protection. These reports will be reviewed by appropriate state agencies and concurred by the respective State Administrators. Also, ISDA will report on the use of EPA grant money for PMP activities.

## **APPENDIX A. Acronyms**

24C	EPA FIFRA Section 24c Pesticide Registration Process
ACP	Agricultural Conservation Program
AGWCC	Agricultural Ground Water Coordination Committee
APAP	Agriculture Pollution Abatement Plan
ASCS	Agricultural Stabilization And Conservation Service
BLM	Bureau Of Land Management
BMPs	Best Management Practices
CERCLA	Comprehensive Environmental Response Compensation And Liability Act
UICES	Cooperative Extension Service
CRBS	Cooperative River Basin Studies
CRMPs	Coordinated Resource Management Plans
CRP	Conservation Reserve Program
CSGWPP	Comprehensive State Ground Water Protection Program
CWA	Clean Water Act
DEMOS	Water Quality Demonstration Projects
DEQ	Department Of Environmental Quality
DRASTIC	Ground Water Vulnerability Technique
ECARP	Environmental Conservation Acreage Reserve Program
EDMS	Environmental Data Management System
EPA	Environmental Protection Agency
EPA 305(b)	Environmental Protection Agency Clean Water Act Section 305(B)

FBL	Feed Back Loop
FIFRA	Federal Insecticide, Fungicide And Rodenticide Act
FSA	Food Security Act
DEQ	Department Of Environmental Quality
GIS	Geographical Information System
GWMTTC	Ground Water Monitoring Technical Committee
GWQ	Ground Water Quality
GWQC	Ground Water Quality Council
GWQP	Ground Water Quality Plan
HEL	Highly Erodible Land
HUAs	Hydrologic Unit Area Projects
I&E	Information & Education
IASCD	Idaho Association Of Soil Conservation Districts
ISDA	Idaho State Department Of Agriculture
DEQ	Idaho Department Of Environmental Quality
IDL	Idaho Department Of Lands
IDWR	Idaho Department Of Water Resources
NPS	Nonpoint Source
NRCS	Natural Resource Conservation Service
QAPP	Quality Assurance Project Plan
RC&D	Resource Conservation and Development

RCRA	Resource Conservation and Recovery Act
SAWQP	State Agricultural Water Quality Program
SLN	Special Local Need
SCC	Soil Conservation Commission
SCD	Soil Conservation District
SDWA	Safe Drinking Water Act
SMP	State Management Plan For Pesticides
STATSGO	State Soil Geographic Data Base
TSCA	Toxic Substance Control Act
U OF I	University of Idaho
UICES	University of Idaho Cooperative Extension Service
UIC	Underground Injection Control
USDA	United States Department Of Agriculture
USFS	United States Forest Service
WRP	Wetland Reserve Program
WQIP	Water Quality Incentive Program
WQS	Water Quality Standards
WQSP	Water Quality Special Project



## **APPENDIX C. REFERENCES**

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